IN 3 5

345835 Report 11172

10 June 1998



Integrated Advanced Microwave Sounding Unit-A (AMSU-A)

Performance Verification Report
METSAT Phase Locked Oscillator Assembly,
P/N 1334360-1, S/N's F03 and F04

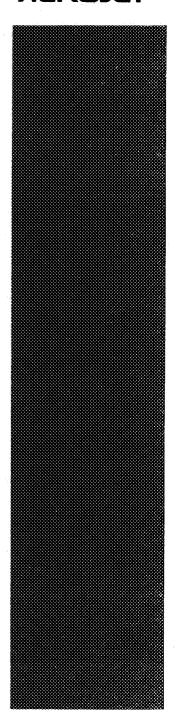
Contract No. NAS 5-32314 CDRL 208

Submitted to:

National Aeronautics and Space Administration Goddard Space Flight Center Greenbelt, Maryland 20771

Submitted by:

Aerojet 1100 West Hollyvale Street Azusa, California 91702





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AMSU-A VERIFICATION TEST REPORT METSAT PHASE LOCKED OSCILLATOR ASSEMBLY

TEST ITEM: AMSU-A PHASE LOCKED OSCILLATOR ASSEMBLY P/N 1348360-1 SERIAL NUMBERS F03, F04

PREPARED FOR

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION GODDARD SPACE FLIGHT CENTER GREENBELT, MARYLAND 20771

PREPARED BY

GENCORP AEROJET POST OFFICE BOX 296 AZUSA, CALIFORNIA 91702-0296

1.0 SUMMARY

Two Flight Model AMSU-A Phase Locked Oscillators (P/N 1348360-1, S/Ns F03 and F04) have been tested per AES Test Procedure AE-26758. The tests included vibration testing, thermal cycle testing, AM/FM Noise testing, and full functional testing. EMI/REO 2 Testing was not performed. (See test data for S/N F01). Both AMSU-A Phase Locked Oscillators satisfactorily passed all performance requirements of the AE-26633 Product specification.

During thermal cycling of PLO serial number F03, the oven and data logger momentarily lost power, including a loss of data. The unit did not experience any thermal stress. TAR 003134 describes the corrective action.

Prior to testing PLO serial number F04, power was applied to the unit. (+15v, -15v) the unit did not display the proper phase lock. Upon test equipment check out a connector was found to be defective. TAR 003133 describes the corrective action.

After completion of testing of PLO serial number F04 was installed into Receiver Assembly F02. Upon testing F02 Receiver Assembly the unit was found not to phase lock at ambient temperature. Removal of PLO Assembly F04 was required. R2 was the real issue. Solithane was secondary. Troubleshooting revealed excessive solithane on inner PLL Assembly cover inhibiting optimum grounding. Also, R2 was reselected which increased the lock range from -30° to +60°C. TAR 002737 describes the corrective action.

2.0 REQUIREMENTS

The acceptance test procedure, AE-26758, consists of tests designed to show compliance of the Phase Locked Oscillator with all requirements stated in the PLO product specification AE-26633. The tests reported herein demonstrate the acceptability of the AMSU-A PLO assemblies, and therefore compatability with the AMSU-A Receiver Assembly.

3.0 RESULTS

The results of the tests required in the Test Procedure AE-26758 are presented in the following section as test data. As shown on the test data sheets, the measured data passed all requirements.

4.0 TEST DATA

A summary of the test data is provided at the start of the section, and raw data for the AMSU-A PLO serial numbers F03 and F04 follows. Both PLO F03 and PLO F04 meet all requirements as defined in AE-26633, the PlO product specification. The following table summarizes how each unit meets and exceeds each requirement.

Summary of Test Results for AMSU-A Phase Locked Oscillator Testing Serial Numbers F03 and F04

Paragraph	Description	Requirements	F03	F04
3.2.1.1	Input Voltage and	600 mA max,	521 mA for +15V	532 mA for +15V
	Current	+15V	66.5 mA for -15V	57.8 mA for -15V
		100 mA max, -		
		15V		
3.2.1.2	Operating	+1°C to +44°C	-10 to +60°C ***	-30°C to +60°C***
	Temperature			
3.2.1.3	Start-up	All loads, -30°C	-30°C and +60°C	-30°C and +60°C
		and +60°C; in	(Ambient pressure)	(Ambient pressure)
		vacuum		
3.2.1.4 &	Frequency Stability	± 200 kHz	-8 kHz, -20 kHz	-5 kHz, -15 kHz
3.2.1.5	from 57.290344			
<u> </u>	GHz at 22°C			
3.2.1.6	RF Output Power	17 to 20 dBm	18.9 dBm	19.7 dBm
3.2.1.7	Output Power	< 1.5 dB	-0.4 dB +0.6 dB	-0.5 dB, +0.3 dB
	Stability			
3.2.1.8	Load VSWR	2.01:1 or less	Verified	Verified
3.2.1.9	AM Noise	<-130 dBc/Hz	-132 dBc/Hz @ 1 MHz	-132 dBc/Hz @ 1 MHz
		@ 1 MHz	-135 dBc/Hz @ >8	-136 dBc/Hz @ >8
			MHz*	MHz*
3.2.1.10	FM Noise	<-100 dBc/Hz	-103 dBc/Hz @ 1 MHz	-103 dBc/Hz @ 1MHz
		@ 1 MHz	-128 dBc/Hz @ >8	-133 dBc/Hz @ >8
			MHz*	MHz*
3.2.1.11	Spurious and Sub	<-90 dBc (No	Better than -92 dBc**	Better than -91 dBc**
	Harmonic Signals	Spur in 110		
		MHz to 400		
		MHz)	D 1 ((1D	
3.2.1.12	Harmonics	<30 dBc	Below -66 dBc	Below -61 dBc
3.2.1.14	Warm-up time	<30 minutes	Verified	Verified
3.2.1.15	Grounding and		By Design	By Design
	Shielding			
3.2.1.16	Input Voltage		By Design	By Design
00115	Protection		D D :	n n :
3.2.1.17	Reverse Polarity		By Design	By Design
E	Protection			
Environmental				
Testing Microphonics		AE-26633	TCXO Test	TCXO Test
Radiation		AE-26633		
Hardness		AE-20033	By Analysis	By Analysis
EMI/RFI		AE-26633	Not Required	Not Required
Vibration	 	AE-26633	Acceptance Level	Acceptance Level
Thermal			Verified at Ambient	I
		AE-26633		Verified at Ambient
Vacuum		2.00 lbs	pressure only	pressure only
Weight		2.00 lbs	2.00 lbs	2.00 lbs

^{*} AMSU-A System Required Frequency
** Spectrum Analyzer Noise Floor = -92 dBm
*** PLO Locable in this range

The remainder of this report contains the raw data taken during the tests of the two flight PLOs. The data is arranged by the following segmentation:

Section 1A: Initial Functional Test - F03

1B: Initial Functional Test - F04

Section 2A: Acceptance Level Vibration - F03

2B: Acceptance Level Vibration - F04

Section 3A: Frequency and Power Hysteresis - F03

3B: Frequency and Power Hysteresis - F04

Section 4A: EMI/RE02 Testing - F03

4B: EMI/RE02 Testing - F04

Section 5A: Final Functional Test - F03

5B: Final Functional Test - F04

Section 6A: AM/FM Noise Levels - F03

6B: AM/FM Noise Levels - F04

Section 1A: Initial Functional Testing - F03

This section contains the results of a full functional test over temperature taken before the PLO (F03) endured 6 thermal cycles.

		17 (%) 18 19 (19 1)
·:		

AEROJET, AZUSA OPERATIONS

ENGINEERING CHANGE NOTICE

	ET		Code 7014					. A	DVANCE RE	L. INCO	RPORATE :	SHEET	_ಬಲ್ಲ
. PROGRAM	2. ECN NUMBER		3. CONTRACT NUM	BER		4. PREPAI	RED BY /	DATE / EXT			5. DOCUMENT NUMBER		6. NEW REV.
COMBINED AMSU	CAMSU- /6	75	NAS 5-323	314		MAR:	90)	1441L/	1.2.8.95	2 / x1305	AE-26758	A	B
7. CHANGE CLASS IA IB AD	8. MULTIPLE DOCUMENTS	9, CHG TYPE DOC CHG	10. HARDV	VARE CURR	REV	NEW	REV	/ EFFECYIV	VITY ITEM S/N	DATE	11. DOCUMENT TITLE Phase look Oscil		
	AFFECTED	HARDWARE	PART NUMBER(S)	MAND	LTST	MAND	LTST	☐ PART	T SERIAL/LOT		Assembly Procedure	-, Tuning	Proceelnies
CR#	YES NO	SOFTWARE	NA					1054	UP		and performance. Amso	test pro	cedure

12. DESCRIPTION OF CHANGE ZONE ITEM

Sec Attached Redlined Spec Data Sheets

Urgent Routine					
13, SIGNATURES	DATE	14. JUSTIFICATION / REASON FOR CHANGE	15. DISPOSITION OF MATERIAL	USE AS MODIFY SCRAP	RETURN TO STORES
Design Verif., Dwg. N.A. OP		Increased Tool Data Shout Rendability	ON ORDER	- N/A -	-
Qual Eng CUCK, Hardymill	2/12/18		IN STOCK	_ N/A -	
DTI /Eng)	2/12/98		INSTALLED	- N/A -	<u> </u>
	2/16/98	AS DEMANUSCOPERIAL INSTRUCTIONS (TECHNICAL EVALUATION)	20. CONFIGURATION CODE:	Markery	understandersche wie vo. Cirken-
	2/16/98	200 regions runnings and no recomment impres	W1. DIST. CODE:	22. REL. QATE	
		17. NASA CONCUBRENCE OF 18. CHANGE 19. PCCB CHAIRMAN / PMO:	23. INCORPOR	RATION	DATE
4.08		CLASSIFICATIONS CODE APPROVES POPULATIONS		•	:
iep	2/12/98	DATE: 21/498 CODE APPROVE DISAPPROVE DEFER DATE: 21/7/92	Design Verif.		

	5161		TA SHEET 1 ion (Paragraph 4.2.1.	1)	
Test Setup Ver	ified: Signatur				
Item	Description	Manufacturer	Model/Part Number	Calibration	Property Number
1					
2					
3					
4					
5				,	
6		**			
7	·				
8		See (SU Tes	4 Sets	
9					3 ·
10					
11					
. 12					
13	·				
14					
15					
16					
17					
18					·
19					·
20					
Shop Order No.:	H31615		Test Engineer:	Met q	4
Unit Serial No.:	F03		Quality Assurance:		
Date: 3-3			Govt. Rep	·.	
			•		

TEST DATA SHEET 2

UUT Verification and Ground Potentials Check (Paragraphs 4.1.2.2 and 4.1.2.4)

Test Setup Verified:	NET
	Signature

			•	•
Paragraph/ Step	UUT Components	Part Number	Verify Presence	
4.1.2.2.	PLO faceplate	1348366-2		
	VCGDO	1348351-1		
	DRO	1348400-1	V	
	Cable	1357793-4	V	
	Filter	1357729-1	1	
	Cable	1348430-1		
	Cable	1348430-2	V	
	Cable	1348430-3		/
<u> </u>	Wires	N/A		
	Connector/Waveguid	e Savers Installed?		

Paragraph/ Step		Test	Required	Measurement	Pass/ Fail
4.1.2.4					
Step 1	Potentia	al Difference			
1	From	То	Required	Measurement	
· ·	GUNN Power Supply RTN	Varactor Power Supply RTN	< 1.0 Vac	0.01	Ars
	GUNN Power Supply RTN	DRO Power Supply RTN, +12 V	< 1.0 Vac	0.01	1748
,]	GUNN Power Supply RTN	DRO Power Supply RTN, -12 V	< 1.0 Vac	0.01	Pass
1	GUNN Power Supply RTN	Spectrum Analyzer 1, Chassis	< 1.0 Vac	0.01	Pass
1	GUNN Power Supply RTN	Spectrum Analyzer 2, Chassis	< 1.0 Vac	0.0/	Pacc
	GUNN Power Supply RTN	Spectrum Analyzer 3, Chassis	< 1.0 Vac	0.01	Pass
1	GUNN Power Supply RTN	Synthesized Sweeper Chassis	< 1.0 Vac	0.01	Pass

Shop Order No.: 431615

Operation: 0040

Unit Serial No.: 603

Date: 3-5-98

Quality Assurant Govi, REP

Test Engineer:

AD & 1998

TEST DATA SHEET 3 (Sheet 1 of 2) Attenuator Determination (Paragraph 4.1.2.4)

Step	Test	Expected	Measured	Pass
		0.4 11.0 170	B. J. Mirro I O D	Fail
5	Recommended LO Power	8 to 11.8 dBm	Recommended Mixer LO Drive Power	N/A
			$P_{opt} = 11.5 dBm$	
6	Initial Attenuator Setting	N/A	AT1 = (DRO Output Power at A6-J1) -	N/A
		/1/ N	(Bandpass Filter Insertion Loss) - P _{opt} =	
	Which dash number attenuator	-1 to -11	AT1 Selected 1331516- 6	N/A
	was chosen?			
13	+12 V Supply Voltage	+12.0 ± 0.1 V	V ⁺ = <u>/2.00</u> V	
•	+12 V Supply Current	< 75 mA	Γ'= <u>40</u> mA	Pas
	-12 V Supply Voltage	-12.0 ± 0.1 V	V= <u>-/λο</u> V	, ,
	-12 V Supply Current	< 90 mA	$\Gamma = \underline{62} \text{mA}$	
14	DRO Output Frequency	6.874841 GHz	Freq _{DRO} = GHz GHz	_
	and	±24 kHz	6.87485 GHZ	Pec.
	Power at A1-J4	11 to 15 dBm	$P_{DRO} = /2.5 dBm$	
15	Gunn Voltage	+8.5 ± 0.1 <u>V</u>	$V_{gunn} = \underline{S.50} V$	
	Gunn Current	< 340 mA	$I_{gunn} = \underline{284}_{mA}$	D
	Varactor Supply Voltage	5.0 ± 0.1 V	$V_{\text{var}} = \underline{S.O} V$	Pes
	Varactor Supply Current	< 5 mA	$I_{var} = \underline{\hspace{1cm} , oo /} mA$	
16	PLO Output Frequency and	N/A	Freq _{PLO} = 5h, 3/9 GHz 6Hz	N/2
	Power	17 to 20 dBm	$P_{PLO} = 17$ dBm	Pas
18	Record IF Frequency and	2.291613 ±0.0001 GHz	IF Frequency = 2.29/6	
	Power	N/A	IF Power = 35.3.9	N/A
20	Record IF Frequency and	2.291613 ±0.0001 GHz	IF Frequency = 2.29161	
	Power	-30 to -40 dBm	IF Power =	Pr

6.874841 ± .000024 GHz

-4: -33.2 511 014 32.9

MAR 0 6 1998

5040

TEST DATA SHEET 3 (Sheet 2 of 2) Attenuator Determination (Paragraph 4.1.2.4)

Step	ph 4.1.2.4 (Cont): Test	Expected	Measured	Pass/
		0.0 to 12.0 dD-	LO Drive Power	Fail
21	LO Power Level	8.0 to 12.0 dBm		Pas
22	Record AT1 dash number	N/A	1331516- <u>6</u>	N/A
32	Record IF Frequency and	2.291613 ±0.0001 GHz	IF Frequency = 2, 29/6/	Pars
	Power	-30 to -40 dBm	IF Power =	Pass
34	DRO Lock Alarm with 573	- 41.7	A1-FL6= <u>-//,58</u> V	Pass
	MHz Signal Off	# LEE !!		Mass

< - 10 Volts

Shop Order No.:	431615
Unit Serial No.: _	E 63

Quality Assurance: MAR 0 6 1998 (36)

GOVT, REP.

SHEET 6 0F 34. BCB NO. 2675

40.

TEST DATA SHEET 4

	Voltage Regulator	Conditionty	rest (r atagraph
	CHE		
Test Setup Verified:	0101		

Signature

Paragraph 4.1.3.3, Continuity Test:

Step	From end of wire #	From end of wire #	Expected Value	Measured Value	Pass/Fail
2	A4E5	R1-2	< 1 ohm	Ool ohun	Dass
	A4E1	R1-1	< 1 ohm	0.1 ohm	Pass

Shop Order No.: 43|615

operation: 0040

Unit Serial No.: F03

Date: 3-5-98

Test Engineer:

MAR U 6 1998

Gort, Rop.

TEST DATA SHEET 5 (Sheet 1 of 5)

Test Setup Ve	ified:	5181					
		Signature					•
Paragraph 4.1	112	•		• *		•	
r aragraphi 4.1		JUT Compon	ents	Par	t Number	Verify Present	ce]
		O Housing As		13	48366-1	V	
		Voltage Regul		1	357979	$\sqrt{}$	
		R1 (Resisto	r)	RER	60F10R0R	/	3-7-9
		Wires			N/A	<u>√</u>	
Paragraph 4.1	414.	Wires			N/A		
	·T· I ·T·				Expected		red Pass/Fail

Step	From	То	Wire Color	Expected	Measured	Pass/Fail
3	Continuity Ch	eckout				
a.	A1FL1	A4E1	Red	< 1 ohm	0.5	Pass
	A1FL2	A4E3	Blk	< 1 ohm	0.1	Pass
	A1FL3	A4E7	Brn	< 1 ohm	0.2	Pass
	A1FL4	A4E2	Blu	< 1 ohm	0.1	Pass
	A1FL5	A4E4	Yel	< 1 ohm	7.4	Pass
	A1FL7	A4E9	Grn	< 1 ohm	0.3	Pass.
ъ.	A4E6	A5VB	Gra	< 1 ohm	0.1	Pass
	A4E10	A5RTN	Grn	< 1 ohm	0.1	Pass
	A4E2	A6FL1	Blu	< 1 ohm	0.1	Pagy
	A4E4	A6FL2	Yel	< 1 ohm		Pass
	A4E8	A6FL1-E3	Gm	< 1 ohm	0.7	Pass
	A1FL6	A6FL3	Wht	< 1 ohm	0.3	Pass
	A1J2	A5VT	Wht	Visual Verification No Measurement	N/A Present	Pass

Step	Test	Expected Value	Measured Value	Pass/Fail
5	Measure voltage levels	+12.0 ± 0.5 V	A1-FL4 +12-1 V	Pass
Ì	ľ	-12.0 ± 0.5 V	A1-FL5(>-1) V	Pass
		8.5 ± 0.5 V	A5VB <u>8,495</u> V	Pass
İ		+12.0 ± 0.5 V	A6FL1 _+() V	P.144
		-12.0 ± 0.5 V	A6FL2 ールル V	Parses

SHEET 8 0F34 ECR NO. 1675

TEST DATA SHEET 5 (Sheet 2 of 5) Voltage Regulator Checkout, PLO Integration (Paragraph 4.1.4)

Step	Test	Expected Value	Measured Value	Pass/Fail		
7	Continuity Test Wire #	· .				
	9	< 1.0 ohm	0.2	Pars		
	10	< 1.0 ohm	0.1	Pass		
	11	< 1.0 ohm	0.1	Pass		
	12	< 1.0 ohm	0.0	Day		
	13	< 1.0 ohm	03	Pay		
	14	< 1.0 ohm	0.1	Pars		
9	Measure Supply Voltages and Currents					
	· Volt Meter 1	+15 ± 0.1 V	150	Pass		
	Volt Meter 2	-15 ± 0.1 V	-15.0	Pass		
	Current Meter 1	600 mA max	ZYLI mA	Pass		
	Current Meter 2	100 mA max	65.5 mf	Pass		
	Faceplate A1FL4	+12.0 ± 0.5 V	12.1	Pass		
	Faceplate A1FL5	-12.0 ± 0.5 V	~12.1	Puss		
	DRO, A6FL1	+12.0 ± 0.5 V	12.(Paris		
	DRO, A6FL2	-12.0 ± 0.5 V	-12.(Pass		
	VCGDO, A5VB	+8.5 ± 0.5 V	8.50	Pass		

Paragraph 4.1.4.2.2:

UUT Components	Part Number	Verify Presence
UUT from Paragraph 4.1.4.1.2	N/A	
PLL/TCXO Assembly	1358332-1	
Cable Assembly	1348435-1	

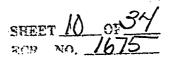
Paragraph 4 1 4 2 4

Step	Test	Expected Value	Measured Value	Pass/Fail
1	Potential Difference From +15 V	RTN To:		
	Spectrum Analyzer Chassis	< 1.0 Vac	0.001 WAC	Pass
	Oscilloscope RTN	< 1.0 Vac	0.001 VAC	Pass

ARA 4.1.4.1.1 STEPS 9+7 REVIEWED 3

TEST DATA SHEET 5 (Sheet 3 of 5)
Voltage Regulator Checkout, PLO Integration (Paragraph 4.1.4)

Step	Test	Expected Value	Measured Value	Pass/Fail
3	Continuity Test		1 ANDERSON TABLE	FASS/FAII
	A1FL4 to A3FL2	< 1.0 ohm	0.1 ohm	Pass
	A1FL5 to A3FL3	< 1.0 ohm	0.1 ohm	Pass
	A1FL4 to A3FL1	< 1.0 ohm	0.15 ohm	Pass
	A3FL1 to A2FL1	< 1.0 ohm	0.1 04m	Pass
6	Voltage Measurement			1 454
	A3FL2	+12.0 ± 0.5 V	+12.15	Pass
	A3FL3	-12.0 ± 0.5 V	-/2.1	Pass
7	Repetition Rate	8 - 12 msec	8.9 msec	Pass
	Rise Time	0.9 - 3.5 msec	3.0msec	Pass
	Fall Time	25 usec - 2 msec	400 usec msec	Pacs
8	Output Power	1 - 4 dBm	3.6dBm	Pass
	Output Frequency	572.90344 ± 0.003 MHz	571 <u>. 9043</u> MHz	Pass
16	Volt Meter 1	+15 ± 0.1 V	15.0	Pras
	Volt Meter 2	-15 ± 0.1 V	-US.0	Pess
	Current Meter 1	600 mA max	514 520	Prss
	Current Meter 2	100 mA max	66 Store	Pass
	PLO Lock Detect Voltage at A3FL4	<1V 0 to 1 V	59 4M m V m gold	Pass
17	RF Output Frequency	57.290344 GHz ± 200 kHz	57,290329 GHZ	Pass
	RF Output Power	17 to 20 dBm	18.7 2/25	Pass
18	DRO Output Frequency at A1J4	6.874841280 CHz ± 24 NHz .000024 CHz	6.874840 GHz	Pass
	DRO Output Power at A1J4	9 dBm min	12.7	Pass
19	Did PLO acquire the Lock?	Yes	Yes '	Pass



TEST DATA SHEET 5 (Sheet 4 of 5) Voltage Regulator Checkout, PLO Integration (Paragraph 4.1.4)

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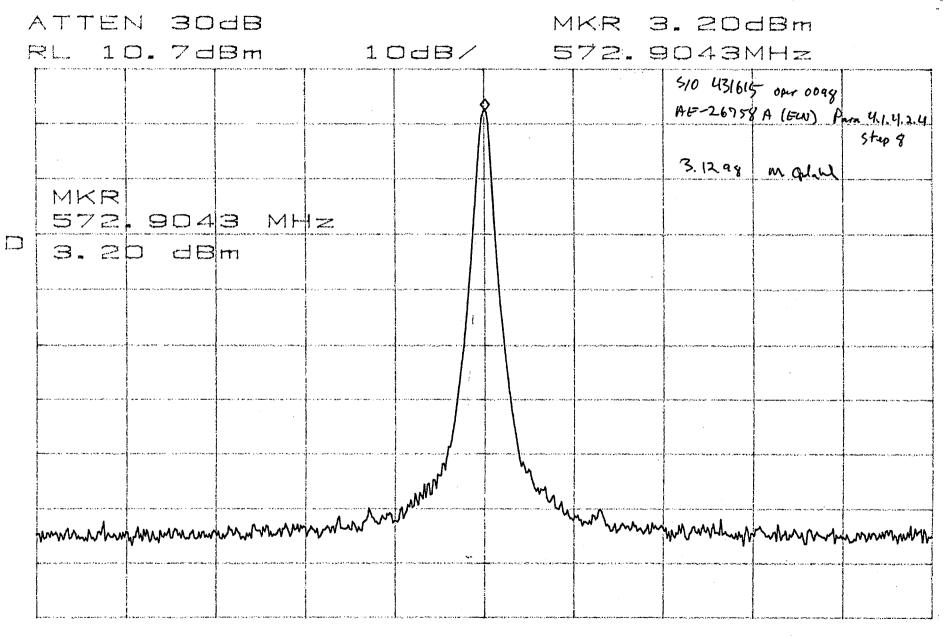
Step	oh 4.1.4.2.4 (Cont): Test	Expected Value	Measured Value	Pass/Fail		
23	Test with 3 dB attenuation in IF line (2.2 GHz) at room ambient					
•	Volt Meter 1	+15 ± 0.1 V	15.0	Pass		
	Volt Meter 2	-15±0.1 V	-15.0	Pass		
	Current Meter 1	600 mA max	520 m4	Ares		
	Current Meter 2	100 mA max	66 mi A	Pass		
	PLO Lock Detect Voltage at A3FL4	0 % 1 V	56 mV	Pass		
	RF Output Frequency	57.290344 GHz ± 200 kHz	57. 2903222574	Abes		
	RF Output Power	17 to 20 dBm	18.7	Pass		
·	DRO Output Frequency at A1J4	6.874841280 GHz ± 24 kHz .000 24 G-Hz	6.874843 GHZ	Poss		
	DRO Output Power at A1J4	9 dBm min	12.7 dBm	Page		
	Did PLO acquire the Lock?	Yes	Yes	Pass		
24	Test with 3 dB attenuation in IF line (2.2 GHz) at +1°C					
	Volt Meter 1	+15 ± 0.1 V	+5.0 U	Pass		
	Volt Meter 2	-15±0.1 V	-15.0 U	Pass		
	Current Meter 1	600 mA max	sou mA	Page		
	Current Meter 2	100 mA max	64.6 m A	Pass		
	PLO Lock Detect Voltage at A3FL4	· 0 to 1 V	45 mV	Pass		
	RF Output Frequency	57.290344 GHz ±-200 kHz	57.290333420GH	Pess		
	RF Output Power	17 to 20 dBm	17.4 dBm	Pass		
	DRO Output Frequency at A1J4	6.874841280 GHz ± 24 kHz . 000024 G-Hz	6.874843 G-Hz	Pass		
	DRO Output Power at A1J4	9 dBm min	13 dBm	Auss		
	Did PLO acquire the Lock?	Yes	Yes	Pass		

TEST DATA SHEET 5 (Sheet 5 of 5) Voltage Regulator Checkout, PLO Integration (Paragraph 4.1.4)

Step	Test	Expected Value	Measured Value	Pass/Fai
24	Test with 3 dB attenuation in I	IF line (2.2 GHz) at +44°C		
(Cont)	Volt Meter 1	+15 ± 0.1 V	15.03	Pass
	Volt Meter 2	-15 ± 0.1 V	-15.00	Pass
	Current Meter 1	600 mA max	534 mA	Pass
	Current Meter 2	100 mA max	68 m A	Pass
	PLO Lock Detect Voltage at A3FL4	<1V- 0 to 1 V. 0002.	97mV	Pass
	RF Output Frequency	57.290344 GHz ± 200 kHz	57,2903206H	
	RF Output Power	17 to 20 dBm	18,34 dBm	PASS
	DRO Output Frequency at A1J4	6.874841280 GHz ± 24 kHz -	6.874860GM	Pass
	DRO Output Power at A1J4	9 dBm min	12.33 dsn	Pass
	Did PLO acquire the Lock?	Yes	Yes	Paz.
26	Test with no attenuation in IF	line (2.2 GHz) at room ambient	·	
	Volt Meter 1	+15 ± 0.1 V	15.00	Pars
	Volt Meter 2	-15 ± 0.1 V	-15.00	Pass
	Current Meter 1	600 mA max	624 mA	Pacs
	Current Meter 2	100 mA max	-66,9 mA	Pars
	PLO Lock Detect Voltage at A3FL4	0 % / V	56 mU	Pass
	RF Output Frequency	57.290344 GHz ± 200 kH z	72 57: 290 315 802 GHZ	Rag
	RF Output Power	17 to 20 dBm	18.64 dbm	Page
	DRO Output Frequency at A1J4	6.874841280 GHz ± 24 kHz .000024 G-H2	6. 474843 64th	Pace
	DRO Output Power at A1J4	9 dBm min	127 den	Pass
	Did PLO acquire the Lock?	Yes	Yas	Page

Shop Order No.: 43/6/5	Test Engineer: Mak Odh
Unit Serial No.: F03	Quality Assurance: (85) MAR 30 1/2 GOVT, AEP Reven 4/1/98
	Gowt, AEP R. Rosew Alilas
Date: 5/25/78	W4120/98

AE-26758A (ELV) Par 1,424 3.12.28 M. Golul (P) APR 9 9 1008 800 H31615 oper 0008 Ch1 +Duty 36.5% Ch1 Mean -3.803 V Ch1 Freq 113.6 Hz Ch1 RMS 9.946 V Δ: 800μs @: 3.55ms M 2.5ms 3216 Acqs ∓ ∜ **Tek Story** 20kS/s Î



CENTER 572. 9034MHz

*RBW 3. OKHz VBW 3. OKHz

SPAN 500. OKHZ SWP 140ms

MPI 17-303 C 05 NOVEMBER, 97 PAGE 10 OF 13

TEST DATA SHEET 1 (Paragraph 4.1 Step 1 & 2)

SHOP ORDER No.: 43/6/5	DATE: 3./2.98
UNIT PART NO. /3 48360-1	TEST ENGINEER: Make Galule
SPD S/N:	QUALITY ASSURANCE: Thich They 37 98

				, , , , , , , , , , , , , , , , , , ,	
<u>ITEM</u>	<u>DESCRIPTION</u>	MANUFACTURER	MODEL/PART Number	CALIBRATION DUE DATE	PROPERTY NUMBER
	Power Supply	HP	6227B	40ct 98	48010
	Power Supply	HD GII4A	-6114A	30 Jun 99	49791
	DUM	НО	3474A	21 May 18	45779
	Dum	НО	3479 A	27 Ang 18	48871
	Dum	40	3478A	2451 98	47351
	Dum	HP	34401 A	20 Feb 99	L-509311
	DUM	HP	3478A	18 Jun 98	47356
	Dun	1-10	34084	21 Nov 98	46915
	Oscope	Tel	T05380	1-20-9	C00200083
	Decade By	Ohn Supply	DE 877	9-15-99	47768
	Attender	TRG	U-Brad	9-26-78	L800849
	Andyer	MP	4563E	5-22-18	(00200095
	Pasemetar	Anritsa	ML83A	12-8-18	1508915
	PONER SEASON	Auntsy	mp716A	12-8-98	5-11202
	Plother	HP	7400A	Notrezid	41222

AEROJET PROPRIETARY DOCUMENT

TEST DATA SHEET 2 (Paragraph 4.1 Step 4)

TEST From +12v Power Supply RTN To	MEASURED	REQUIRED	PASS/FAIL
8566B Spectrum Analyzer Chassis	.01	< 0.1v	Pass
DVM #1 Common	.01	< 0.1v	Pass
DVM #2 Common	.01	< 0.1v	Pass
DVM #3 Common	. 0	< 0.1v	ρ_{ay}
DVM #4 Common	, 01	< 0.1v	Pass
DVM #5 Common	.01	<0.1v	Pass
DVM #6 Common	.01	< 0.1v	Pass
DVM #7 Common	.0(< 0.1v	Pass
Oscilloscope RTN	. 0 (< 0.1v	Pass

SHOP ORDER NO.: 431615	DATE: 3.(2.98
UNIT S/N: F03	TEST ENGINEER: Mah Qulul
	QUALITY ASSURANCE: A Studie 19 98

TEST DATA SHEET 3 (Paragraph 4.1)

ere j	TEST SETUP Verified: Nak Golab SIGNATURE					
STEP	TEST	MEASURED	MEASURED AFTER C25 SOLDERED IN PLACE	PASS/FAIL		
	A2E1, A2E2 Voltage Check	A2E1= -1.29 V A2E2= +1.44 V	A2E1=	N/A		
12 <u>to</u> 15	Calculate Percent ** Difference By ABS ((E _a -E _b)/E _a) X 100			N/A		
	Is % Difference less Than 25%		Y	* Pais		
15, 19	Record C25 Value	C25= [43 pF	C25= / 4.3 pF	N/A		
21	Decade Box Setting Minimize Voltage	N/A N/A •	<u>4.14</u> KOhms • 03 V	N/A N/A		
22	Record R2 Value	N/A	R2= <u>4.12</u> KOhms	N/A		
* REQUIREMENT = YES = PASS ** WHERE E ₂ IS THE LARGER AND E ₃ IS THE SMALLER OF THE MEASURED VOLTAGES. UNIT PART NO. /3 48360 -/ UNIT SERIAL NO.: FØ3 SHOP ORDER NO.: 43/6/5 TEST ENGINEER: Many for the Measured Voltages. VETTURED, Involid. See next page QUALITY ASSURANCE: Many for the Measured Voltages. VIII SERIAL NO.: FØ3 See next page						
DA	DATE: 31498 TECHNICIAN: N/A - Madi Glaby					

TEST DATA SHEET 3 (Paragraph 4.1)

	TEST SETUP Verified: Mak Color SIGNATURE				
STEP	TEST	Measured	MEASURED AFTER C25 SOLDERED IN PLACE	Pass/Fail	
•	A2E1, A2E2 Voltage Check	A2E1= - /.0 \ V A2E2= /. / \ V	A2E1= 989 V A2E2= 1. 067 V	N/A	
12 <u>to</u> 15	Calculate Percent ** Difference By ABS ((E _a -E _b)/E _a) X 100	<u></u>	<u>7</u> %	N/A	
	Is % Difference less Than 25%	YesNo	Yes ;No	* P ₂₆₅	
15, 19	Record C25 Value	C25= / 0 pF	C25= /O pF	N/A	
21	Decade Box Setting Minimize Voltage	N/A N/A ◆	4460 Ohms	N/A N/A	
22	Record R2 Value	N/A	R2= <u>4640</u> Ohms	N/A	
* * Un Sh Te	* REQUIREMENT = YES = PASS ** WHERE E ₂ IS THE LARGER AND E ₃ IS THE SMALLER OF THE MEASURED VOLTAGES. UNIT PART NO. /3 48 760 -/ Unit Serial No.: FO3 Shop Order No.: 43/6/5 TEST ENGINEER: M. PAL LA QUALITY ASSURANCE: 24 10 98				
1	DATE: 3/22/18 TECHNICIAN: M. Goldel				

TEST DATA SHEET 4 (Paragraph 4.1)

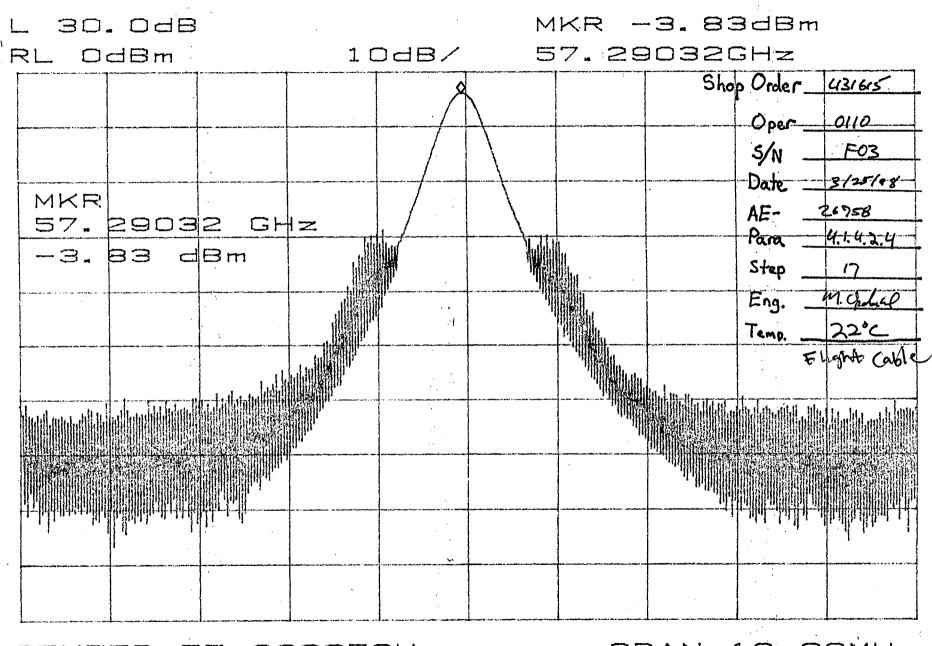
STEP	TEST	MEASURED	EXPECTED	PASS/FAIL
25	Voltage Measurement	A2E1= - / 09 V A2E2= /. 82 V	N/A	N/A
		Sum:V		
28	Voltage Measurement	A2E1= - /.09 V A2E2= /.03 V Sum: 095 V	N/A	N/A
29	a) +15v voltage +15v current -15v voltage -15v current	/5.0 V 524 mA -150 V -66.5 mA	+15v <u>+</u> 0.1v 600 mA max -15v <u>+</u> 0.1v 100 mA max	Pass
	b) 57.290344GHZ RF output		18.5dBm <u>+</u> 1.5dB	Pass
	c) 6.87GHz RF output		12dBm <u>+</u> 2.0dB	Pass
UN	HT PART NO. 1348360- HT SERIAL NO.: F83 HTE: 3 (2,44		NO: 43/615 ER: Mark Stock URANCE: A Stuly MAR	171 98 2XI 1890

RETUNED. Invalid. See next page.

TEST DATA SHEET 4 (Paragraph 4.1)

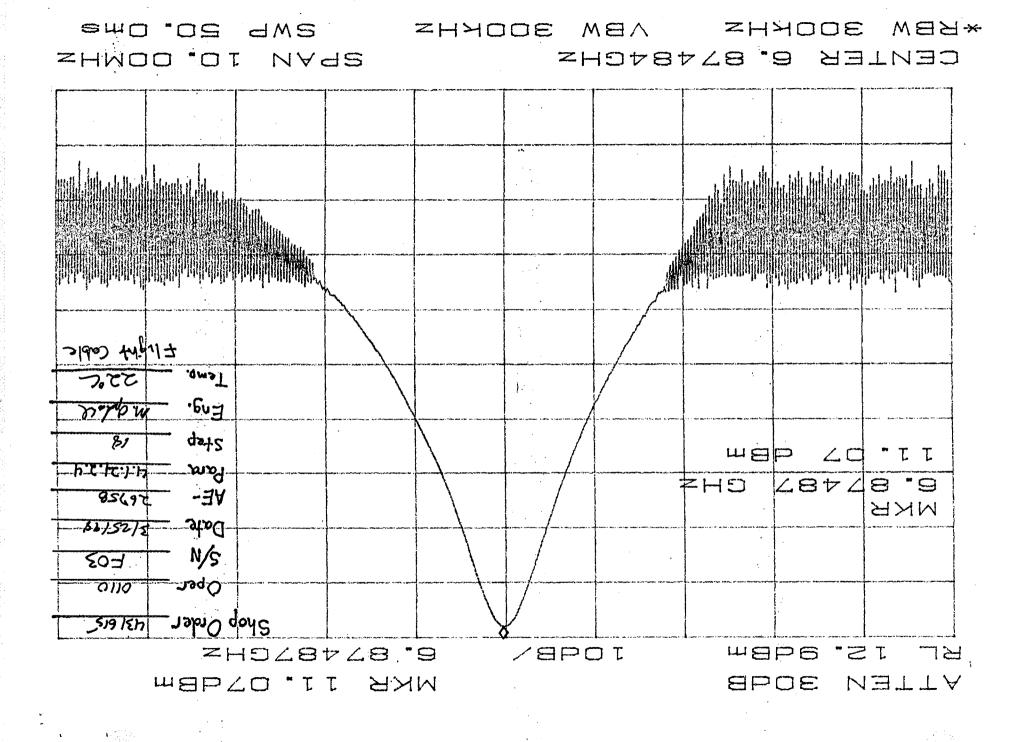
STEP	TEST	MEASURED	EXPECTED	PASS/FAIL
25	Voltage Measurement	A2E1=87 V A2E2= 1.40 V Sum: ~17 m V	N/A	N/A
28	Voltage Measurement	A2E1= V V A2E2=	N/A	N/A
29	a) +15v voltage +15v current -15v voltage -15v current	+15.0 V +591 mA -15.0 V 66.5 mA	+15v ± 0.1v 600 mA max -15v <u>+</u> 0.1v 100 mA max	Ross
	b) 57.290344GHZ RF output	dBm	18.5dBm ± 1.5dB	Pass
	c) 6.87GHz RF output		12dBm <u>+</u> 2.0dB	Pass

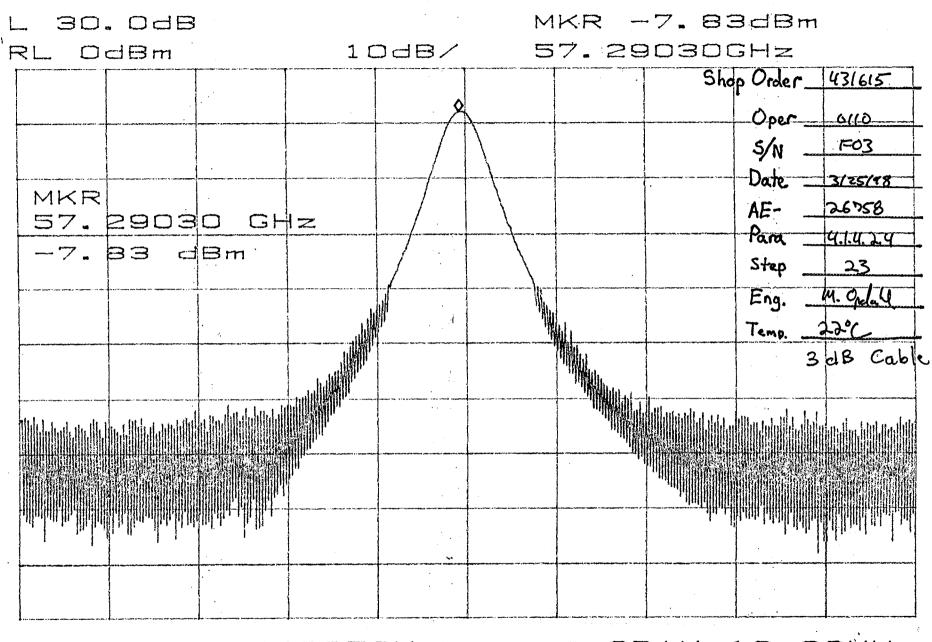
Unit Part No. /348360-/	SHOP ORDER NO.: 43/6/5
Unit Serial No.: F03	TEST ENGINEER: TEST ENGINEER:
DATE: 3/22/18	QUALITY ASSURANCE: (7A) NAR 30 '98



CENTER 57. 29037GHz SPAN 10. DOMHZ *RBW 300kHz VBW 300kHz

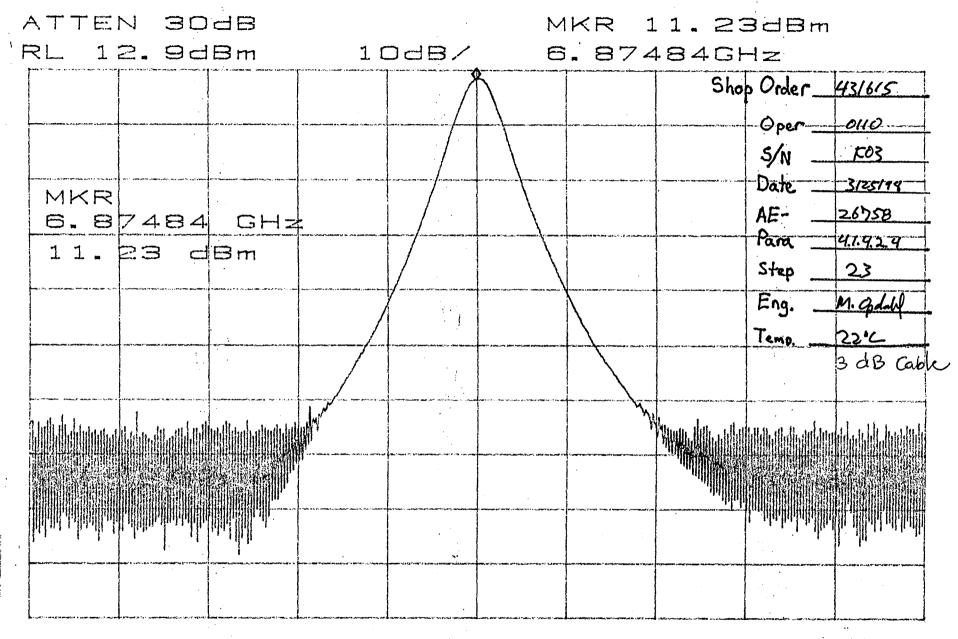
SWP 50.0ms





CENTER 57.29037GHz SF *RBW 300kHz VBW 300kHz

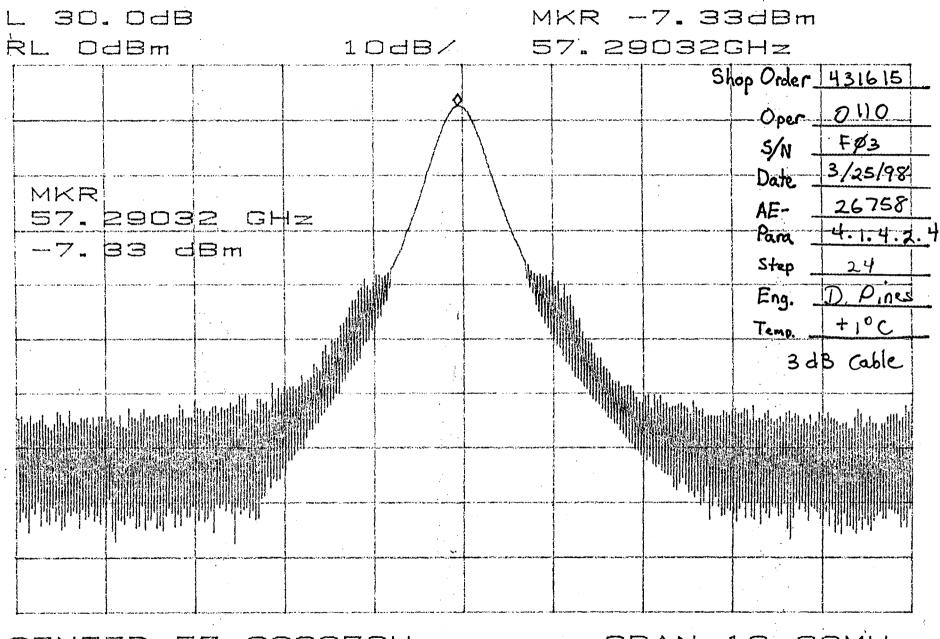
SPAN 10. DOMHZ Hz SWP 50. Oms



CENTER 6.87484GHz

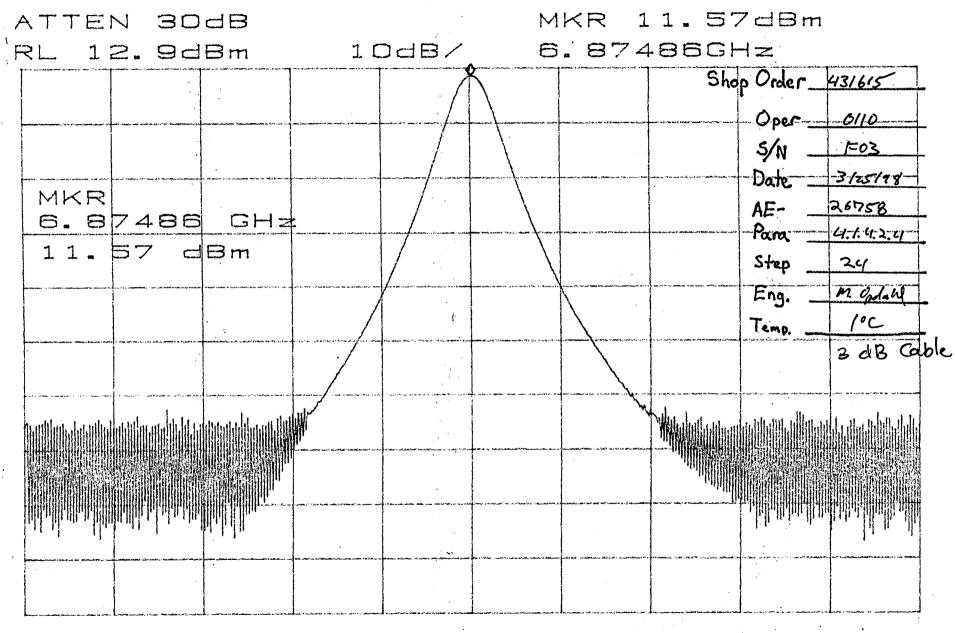
*RBW 300kHz VBW 300kHz

10.00MHz SPAN SWP 50. Oms



CENTER 57.29037GHz SF *RBW 300kHz VBW 300kHz

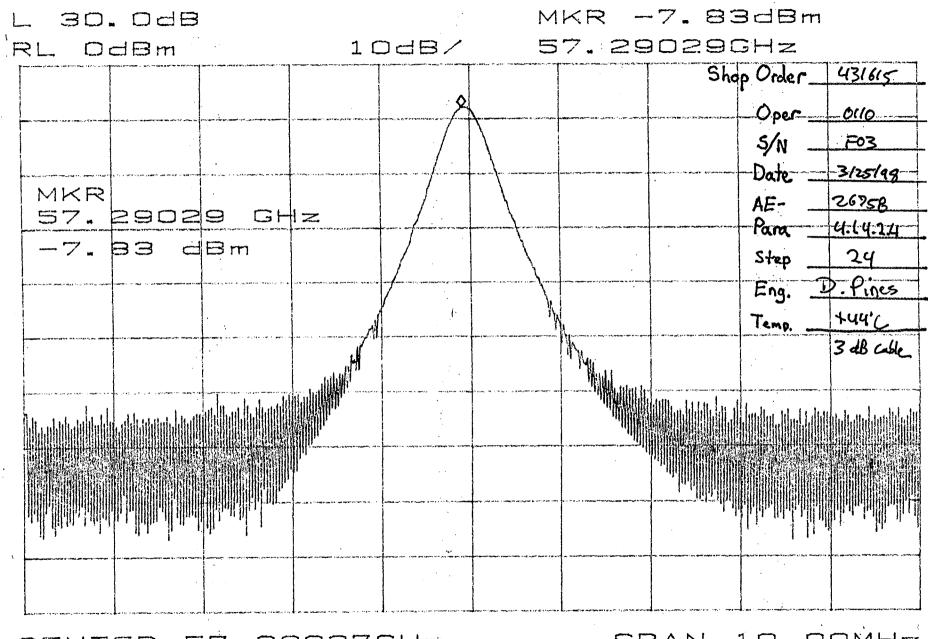
SPAN 10.00MHz SWP 50.0ms



*RBW 300kHz VBW 300kHz

CENTER 6.87484GHz

SPAN 10. DOMHZ SWP 50. Dms



CENTER 57. 29037GHz *RBW 300kHz VBW 300kHz

SPAN 10. DOMHZ SWP 50. Dms

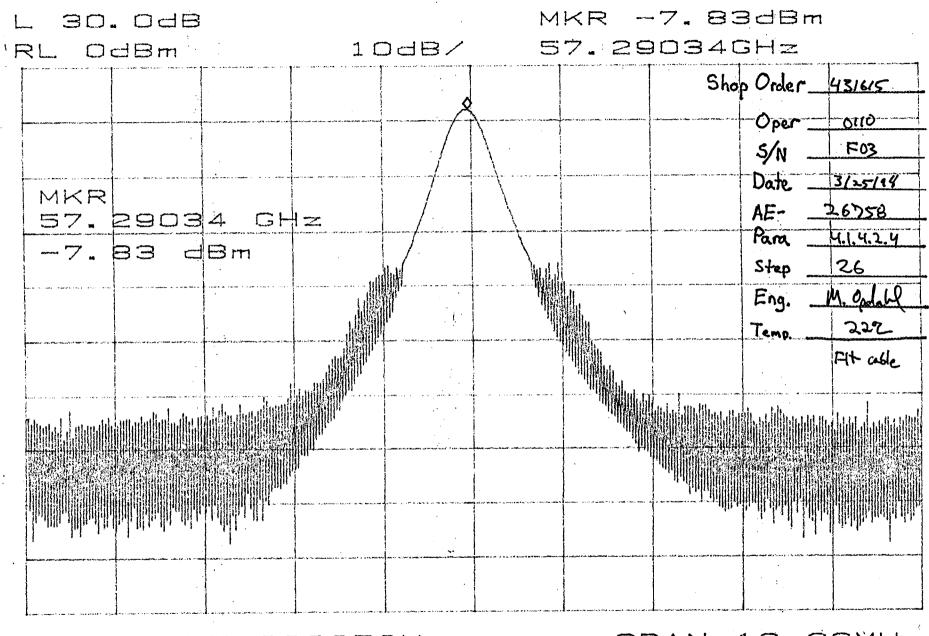
MKR 10.90dBm ATTEN 30dB 6.87486GHz 10dB/ RL 12.9dBm Shop Order 431615 Oper -0110-S/N F03 Date 3/25/48 RECALL REG AE-26758 44 Para 4.1.4,2,4 Step 24 D. Pines Eng. Temp. +4400 3 dB calle 10.00MHz CENTER 6.87484GHz SPAN

300kHz

*RBW 300kHz VBW

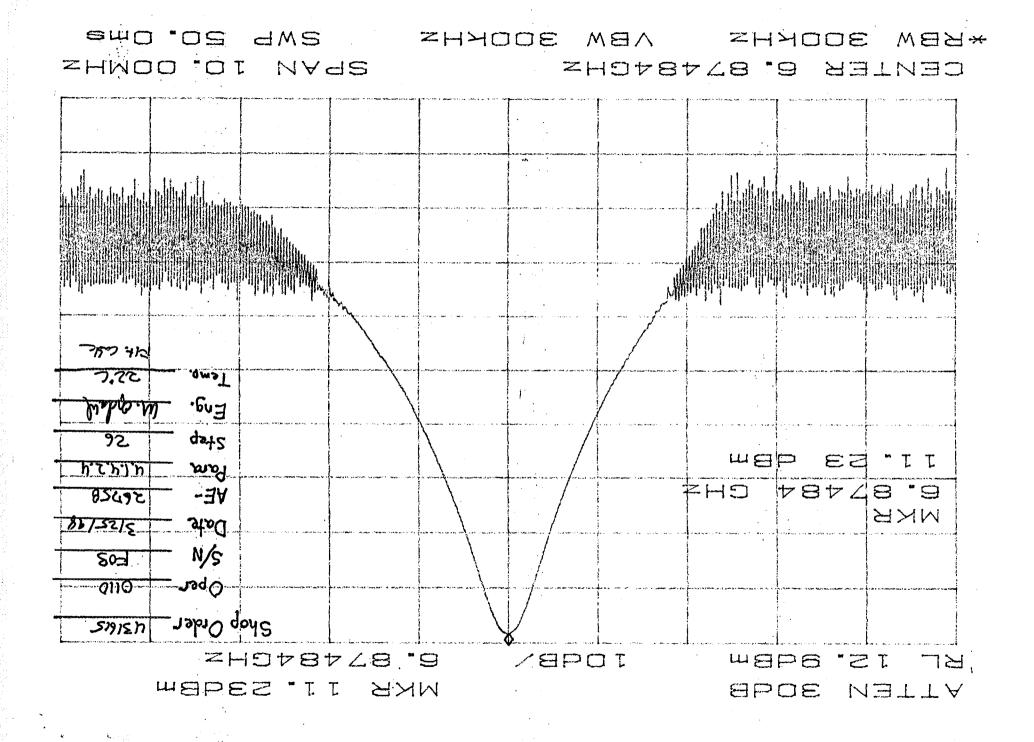
50. Oms

SWP



CENTER 57. 29037GHz SF *RBW 300kHz VBW 300kHz

SPAN 10.00MHz SWP 50.0ms



SHEET 12 0134

6BA

TEST DATA SHEET & (Sheet 1 of 4) Functional Testing (Paragraph 4.2.1)

- PRE-Environmental CPT

Signature

Paragraph 4.2.1.3, Functional Testing:

Step	Test	Expected	Measured	Pass/Fail
1	Potential Difference from ± 15	V RTN to:		
	PLO Base Plate	< 1.0 Vac	.005	Pacs
	Spectrum Analyzer	< 1.0 Vac	Pus	Page
	Frequency Counter Chassis	< 1.0 Vac	.00プ	Pass
	Power Meter Chassis	< 1.0 Vac	.003	Pass
4	Evacuate vacuum chamber and record pressure	<10 ⁻² torr	Pressure = 1011 NIA Awhient	NIAS
5	Thermal couple readings	TC1 = 22 ± 2 °C	TC1= 22.1 °C	Press
	1	·	TC2=_ユンし_ °C	N/A
		·	TC3 = 21.5 °C	N/A
6	DRO L/A	414041V	DRO L/A = 56 MV	Pass
	PLO L/A	44061V	PLOL/A = 44 mV	Pass
	Is PLO locked?	Yes	Yes X	
		0002 64	₂ No	Pass
7	PLO Frequency .	57.290344 GHz ± 200 kHz	Freq. = 57,290 326 96 GHz	Pass
i i	PLO Power	17 to 20 dBm	P = <u>/8.9</u> dBm	Pass
8	Input Voltage and Current			
1	VM1 Voltage	+15 ± 0.1 V	VM1 = <u>/5·0</u> V	Pass
	VM2 Voltage	-15 ± 0.1 V	VM2=/5.0_V	Poss
	IM1 Current	600 mA max.	IM1 =520mA	Pass
}	IM2 Current	100 mA max.	IM2 = 66.2 mA	Pass
ļ	DRO L/A Voltage	«1V 0 % 1 V	DRO L/A = _ 56 .n V	Pass
	PLO L/A Voltage	-HY 0 61V	$PLOL/A = \frac{49}{m}V$	Pass
12	RF Output Power and	17 to 20 dBm. 000 2 64	P = 18.9 dBm	Pass
	Frequency	57.290344 GHZ±200 kHz	Freq. = 57.240 32 6 85 GHz	Pass
1	Baseplate Temp. (TC1)	$TC1 = 22 \pm 2^{\circ}C$	TC1= 22,2 °C	Puss
13	Frequency vs. Voltage			
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = <u>15.19</u> V	Piss
		-15.2 ± 0.05 V 0002 64	12 Voltage =15.20 V	Pais
		57.290344 GHz ± 200 kHz	Freq. = 57.290 326 712 GHz	Pars
		17 to 20 dBm	P = <u>18.9</u> dBm	Pass

It Record dute only it performing test under vacanon

stet

AE-26758A 21 Jan 98

CBA TEST DATA SHEET 8 (Sheet 2 of 4) Functional Testing (Paragraph 4.2.1)

	ph 4.2.1.3 (Cont):	Expected CA	Measured	Pass/Fai						
Step	Test	Expected	Measured	rassira						
14.	Frequency vs. Voltage	1.0.00577	Walter /// // W	0						
	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage = $\frac{ u,y }{V}$	Pass						
		-14.8 ± 0.05 V 0002 G	$Voltage = -\frac{74.83}{2}V$	Pass						
		57.290344 GHz ± 200 kHz	Freq. = 5). 210 326665 GHz	Pass						
		17 to 20 dBm	P= <u>/%.9</u> dBm	Puss						
-15	Spurious and Sub	-2∞ / ₆ -90 dBc	See Plots	Pess						
16	Power level of 114.58 GHz	<-10 dBm	Power of 114.58 GHz-	_						
	signal		dBm	Pass						
17	Load VSWR and Frequency I	Pulling								
	2:1 mismatch over 1λ	N/A	Worst Case Freq =	N/A						
	2:1 mismatch over 1λ	N/A	Worst Case Power = 3 2 dB Peak	N/A						
18	Operating Temperature	TC1 = 1 ±2°C	TC1 = 1,40C	Pass						
	@ 1°C baseplate		TC2= 1.プル	N/A						
			TC3 = 1.0°C	N/A						
		0 - 1V	DRO L/A = <u>.047</u> V	Pass						
	·	0 - 1V	PLO L/A = .042 V	Pass						
19	Input Voltage and Current									
	VM1 Voltage	+15 ± 0.1 V	VM1 = <u>/5.0</u> V	Pass						
	VM2 Voltage	-15 ± 0.1 V	$VM2 = \underline{-cS.O} V$	Pas						
	IM1 Current	600 mA max.	$IM1 = \underline{ \text{(7) (7)} \text{mA}}$	Pass						
	IM2 Current	100 mA max.	$IM2 = \underbrace{\ell \ (!) \ mA}$	Pass						
	DRO L/A Voltage	41× 0/6/	DRO L/A =,047_V	Pass						
	PLO L/A Voltage	SIV-061	PLO L/A = 1042 V	Pass						
	RF Output Power	17 to 20 dBm .0002 6	Power = <u>19.</u> dBm	Pass						
	Frequency	57.290344 GHź ± 200 kHz	Freq. = 47. 290 324 496 GHz	Pass						
	Frequency vs. Voltage	<u> </u>								
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = /2.2 V	Pass						
	_ 10 . Dopp	-15.2 ± 0.05 V.0003 G		Pass						
		57.290344 GHz ± 200 kHz	412	Pass						
		17 to 20 dBm	Power = 161. 5 dBm	Pass						
	Frequency vs. Voltage	17 to 20 dDiff		1 / 4,23						
		.140±005 V	+Voltage = $\frac{/4.6}{V}$	Pass						
	± 15 V Supplies	+14.8 ± 0.05 V)							
		-14.8 ± 0.05 V _{0002 6}	Freq. = 57. 240328 452GHz	Pass						
		57.290344 GHZ ± 200 kHz	• -							
	1	17 to 20 dBm	Power =dBm	Pors						

SHEET 14 OF 34 ECR NO. 1675

68 A TEST DATA SHEET 6 (Sheet 3 of 4) Functional Testing (Paragraph 4.2.1)

Step	ph 4.2.1.3 (Cont): Test	Pre-Environmental G Expected	Measured Measured	Pass/Fail						
19	Spurious and Sub	-200 to -90 dBc	See Plots	Dass						
(Cont)	Power level of 114.58 GHz signal	<-10 dBm	Power of 114.58 GHz = -76 dBm	Pacs						
	Load VSWR and Frequency P	and Frequency Pulling								
	2:1 mismatch over 1λ	N/A	Worst Case Freq =	N/A						
	2:1 mismatch over 1λ	N/A	Worst Case Power =	N/A						
21.	Operating Temperature	TC1 = 44 ±2°C	TC1 = 44.5°C	Pass						
	@ +44°C Baseplate		TC2= 44.806	N/A						
	C 111 O Datopials		TC3= 44.5°C	N/A						
		0 - 1V	DRO L/A = 109 mV	Pass						
		0 - 1V	PLO L/A = K8 LN	Pass						
22	Input Voltage and Current									
	VM1 Voltage	+15 ± 0.1 V	VM1 = 15.0 V	Pecss						
	VM2 Voltage	-15 ± 0.1 V	$VM2 = \underbrace{\sim (\varsigma, Q)}_{} V$	Perss						
•	IM1 Current	600 mA max.	IM1 = s34 mA	Puss						
	IM2 Current	100 mA max.	$IM2 = \underline{\qquad \epsilon \% \qquad} mA$	Pays						
	DRO L/A Voltage	414061V	DRO L/A =/07V	Pass						
	PLO L/A Voltage	C140111	PLO L/A = <u>88</u> mV	Pass						
	RF Output Power and	17 to 20 dBm 0∞2 64	Power = $\frac{\sqrt{S_c}}{dBm}$	Pass						
	Frequency	57.290344 GH2 ± 200 kHz	Freq. = 57. 2-90 39 72 GHz	Pass						
	Frequency vs. Voltage		:							
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = <u>+/5.19</u> V	Pass						
	••	-15.2 ± 0.05 V 0002 6	$-\text{Voltage} = \frac{-15.2 \text{ V}}{12}$	Press						
		57.290344 GH2 ± 200 kHz	Freq. = 5). 220 3/993 GHz	Pass						
		17 to 20 dBm	$Power = \underline{i8.1} dBm$	Pass						
	Frequency vs. Voltage									
	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage = +/U.5 V	Perss						
	•	-14.8 ± 0.05 V 0002 6	-Voltage =	Pass						
		57.290344 GHZ ± 200 kHz	Freq. = 5). 270 3/2 245 GHz	Perss						
		17 to 20 dBm	$Power = \frac{19.1}{\text{dBm}}$	Days						

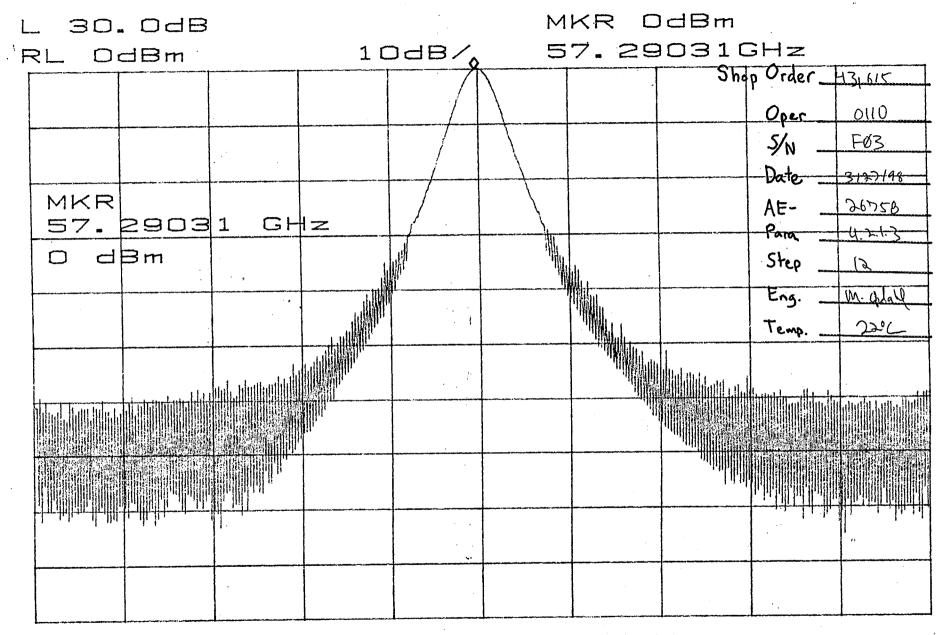
AE-26758A 21 Jan 98

654 TEST DATA SHEET 6 (Sheet 4 of 4) Functional Testing (Paragraph 4.2.1)

Doragra	ph 4.2.1.3 (Cont):	Post Themat Exching	CPT	
Step	Test	Expected	Measured	Pass/Fail
22	Spurious and Sub	-200 to -90 dBc	See Plots	Pars
(Cont)	Power level of 114.58 GHz signal	<-10 dBm	Power of 114.58 GHz dBm	Pass
	Load VSWR and Frequency	Pulling		
	2:1 mismatch over 1λ	N/A	Worst Case Freq =	N/A
	2:1 mismatch over 1λ	N/A	Worst Case Power =3 dB	N/A

Shop Order No.:	0110	
Unit Serial No.: _		
Date: S	128/98	

Test Engineer:	at Of	Sell_	
Cartinal (20)	NAR 30 '98		
Quality Assurance (268)	mun	4/1/18	
Deme:			



CENTER 57.29034GHz *RBW 300kHz VBW 300kHz SWP 50.0me

SPAN 10. DOMHZ

ATTEN 300B MKR 12.77dBm 'RL 15.1dBm 10dB/ 6.874840GHz Shap Order 43/615 -6110 5/N FØ3 3/27/98 MKR AE-26758 6.874840 GHz 4.213 12.77 dBm Step Eng. M. ObdaW Temp. 22°C W

CENTER 6.874843GHz RBW 30kHz VBW 30kHz

SPAN 2.000MHz SWP 50.0ms

CL 30.0dB VAVG 22 MKR -97.33dBm RL OdBm 10dB/ 56.8606500GHz Shap Order 431615 Oper_ 6)10 5/N 井03 3127/90 MKR 26758 AE-56.8606500 GHZ Para 4213 -97L 33 dBm Step 15 Eng. 1. opalate 2200 Temp.

CENTER 56.8606500GHz *RBW 3. OKHz *VBW 1. OKHz SWP 420ms

SPAN 500. OKHZ

CL RL		O.Od dBm	В	VAV0	3 25 DdB/			-96. 33876		
						A. W			p Order_	-
									-Oper_	6110
									5/N _	F03
	FN	TER							Date _	3/27/18
į		0038	760	GHz					AE	26)58
						<u>.</u>			Para_	4.2.1.3
			. 3						Step _	15
									Eng	M. Colay
									Temp.	2200
					,				·	
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			·							
	ng at ang digana at the galactic and a state									
						:			·	
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				<u> </u>						

CENTER 57. 0038760GHz SPAN 500. OKHZ

*RBW 3. OKHz *VBW 1. OKHz

CL 30.0dB VAVG 30 MKR -96.00dBm 'RL OdBm 10dB/ 57.1471020GHz Shop Order 43,615 Oper 0110 5/N FO3 3/27/98 CENTER AE-26758 57. 1471020 GHZ Para 4.2.1.3 Step 15 Eng. M. Onday Temp. _ 550C

CENTER 57. 1471020GHz *RBW 3. OKHz *VBW 1. OKHz SWP

SPAN 500. OKHZ 420ms

CL RL		O.Od dBm	B	VAVC	3 17 DdB/		-96.8 33553	•	
			·			 / a	Sha	p Order	431615
								Oper	0110
		·						5/N _	F03
								_Date	3/27/94
I		TER						AE	26758
	57 .	4335	530	GHz				Para	4,2,1,3
			,					Step _	15
-		The state of the s	.,			·		Eng	M. Odar
								Temp.	226

-									
				:					
-									
			A Control of the Cont						
	41 4 A 44 A 44 A	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	m. A	A Arthur A and A	1	A sour &	۸ مدید که میصادی	A	

CENTER 57. 4335530GHz SPAN 500. OKHZ *RBW 3. OKHZ *VBW 1. OKHZ

R	L O	0.0d dBm		VAVG 18 10db/		MKR -96.33dBm 57.5767790GHz				
Г								Sh	op Order_	431615
									Oper_	0110
								·	5/N _	F03
									Date	3127/98
3	CEN				:				AE	26758
-	57.	5767	790	GHz					Para	4.2.1.3
			ڔ						Step _	15
-									Eng.	M. Oplant
			,						Temp	72°C
									• .	
-						· · · · · · · · · · · · · · · · · · ·				
					·					
-						· · · · · · · · · · · · · · · · · · ·			-	
٠	. And Moran Americal	Markonina and Markey	man m	Musey man	mannim	Sunsala mary	took white man early	Marian Man Amaria	- way	A. was a man

CENTER 57.5767790GHz SPAN 500.0KHz *RBW 3. OKHZ *VBW 1. OKHZ

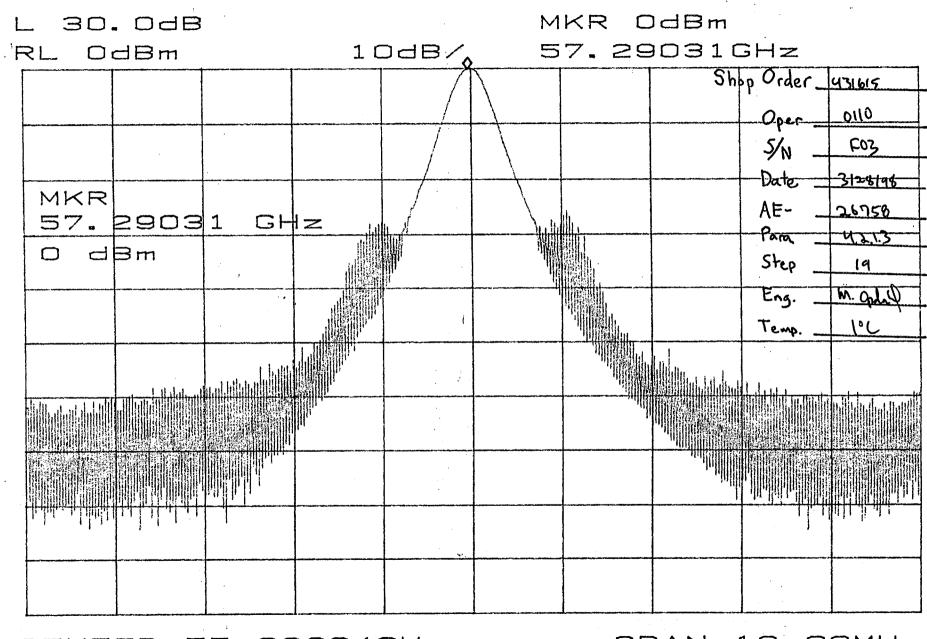
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	CEN	1		-					AE	26758
	5/.	7200	<u>U54</u>	GHz					Para	4.2.1.3
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CENTER 57. 7200054GHz SPAN 500. OKHz *RBW 3. OKHz *VBW 1. OKHz

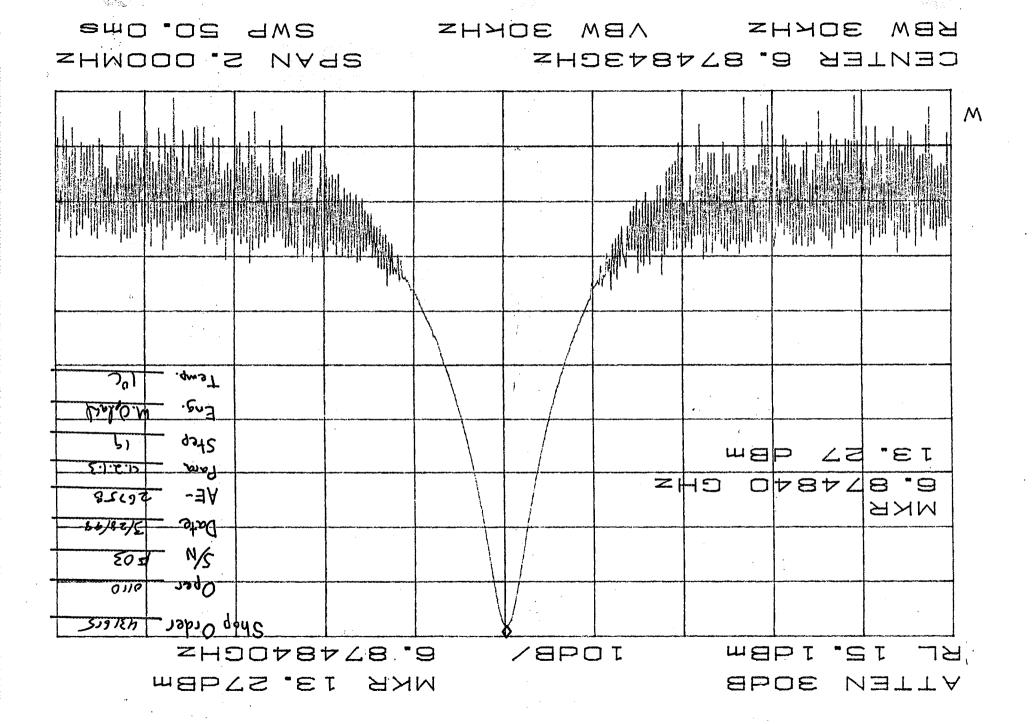
CL 30.0dB MKR -78.83dBm RL OdBm 114.580567GHZ Shop Order 43/6/5 10dB/ Oper _ 0110 5/N F03 Date 3/27/98 MKR AE-26758 114,580667 GHZ 4.2.1.3 Para -781 83 dBm Step Temp. 2206

CENTER 114.580700GHz SPAN 5.000MHz *RBW 30KHz *VBW 1.0KHz



CENTER 57.29034GHz SP *RBW 300kHz VBW 300kHz

SPAN 10.00MHz Hz SWP 50.0ms



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CENTER 56.8606509GHz SPAN 500.0kHz *RBW 3. OKHz *VBW 1. OKHz

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CENTER 57. 0038767GHz SPAN 500. OKHZ *RBW 3. OKHZ *VBW 1. OKHZ

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CENTER 57. 1471025GHz SPAN 500. OKHZ *RBW 3. OKHZ *VBW 1. OKHZ

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									5/N _	F-03
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CENTER 57. 4335540GHz SPAN 500. OKHZ *RBW 3. OKHz *VBW 1. OKHz SWP 420ms

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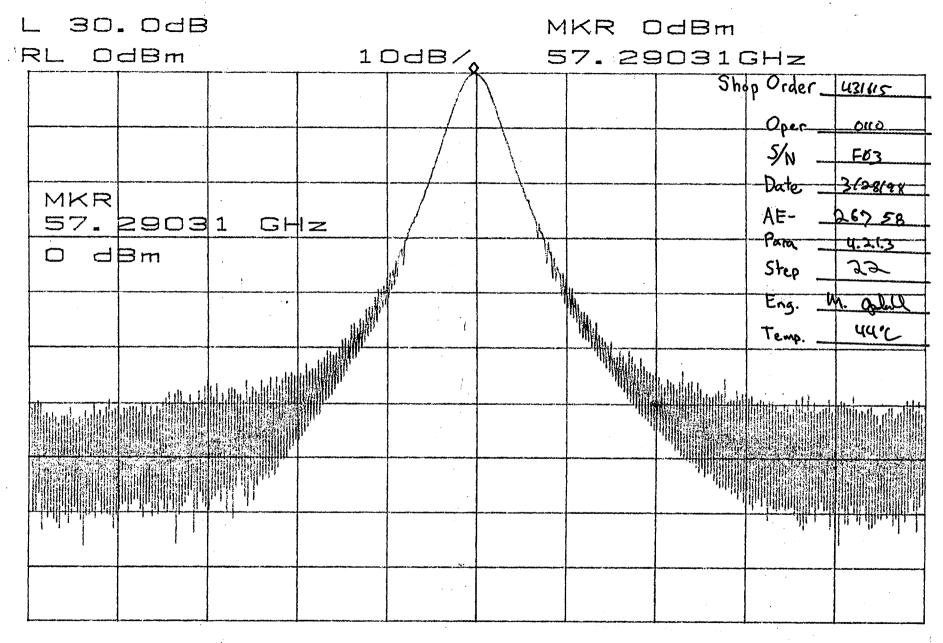
CENTER 57.5767800GHz SPAN 500.0kHz *RBW 3. OKHZ *VBW 1. OKHZ

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CENTER 57. 7200058GHz SPAN 500. OKHz *RBW 3. OKHz *VBW 1. OKHz SWP 420ms

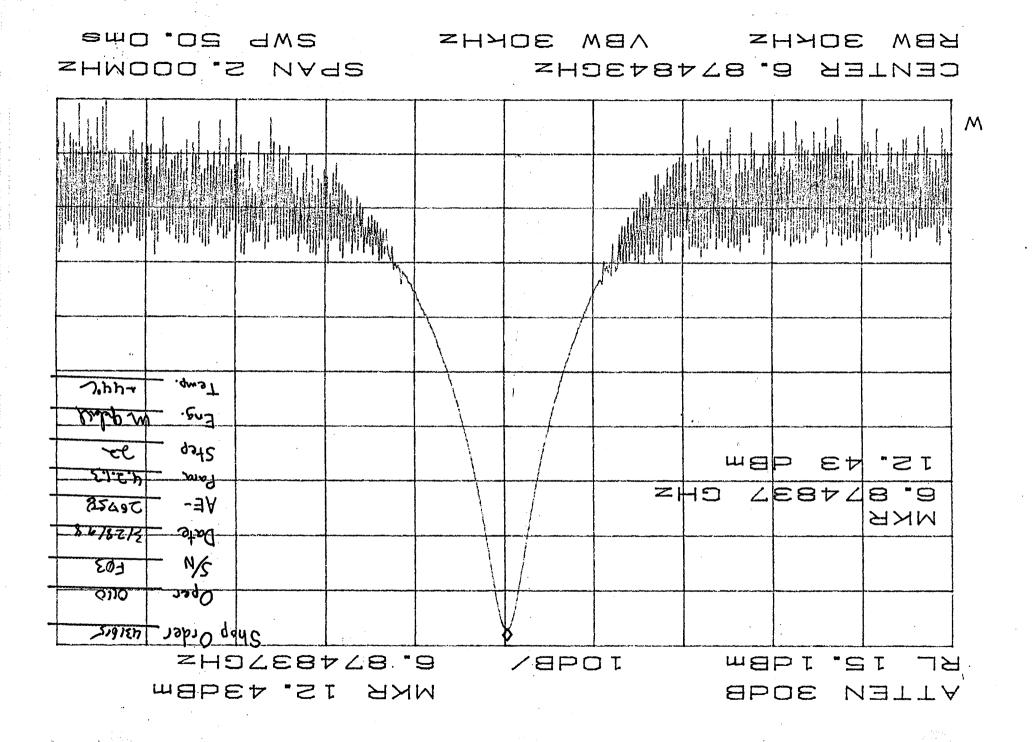
30.0dB MKR -76.00dBm RL OdBm 114.580675GHz 10dB/ Shop Order 143161 Oper Ond 5/N F03 3/28/98 MKR AE-26758 114.580675 GHZ 4213 -76,00 dBm Step an. chlack Eng. Temp.

CENTER 114.580700GHz *RBW 100kHz *VBW 1.0kHz SPAN 5. DODMHZ SWP 130ms



CENTER 57. 29034GHz SPAN 10. 00MHz

*RBW 300kHz VBW 300kHz SWP 50.0ms



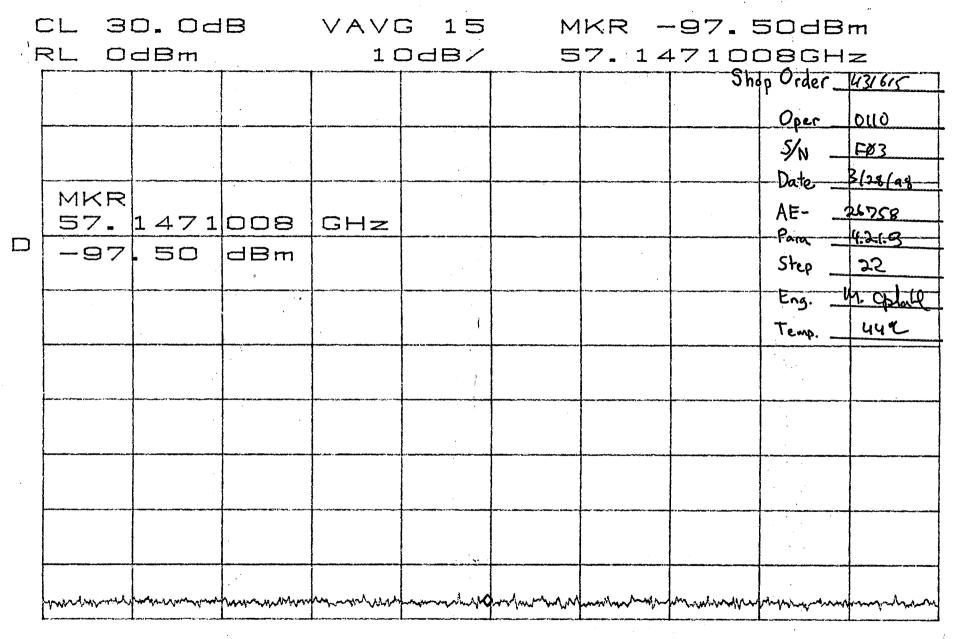
CL 30.0dB VAVG 42 MKR -97.00dBm RL OdBm 10dB/ 56.8606492GHz Shop Order _ 43/675 Oper _ 600 5/N F&3 3/28/98 MKR AE-26758 56. B606492 GHZ Para 4213 -971.00 dBm Step 22 m-a-l-lo 4400 Temp.

CENTER 56.8606509GHz *RBW 3. OKHz *VBW 1. OKHz SWP

SPAN 500. OKHZ 420ms

CL		o. od	B	VAV		•		-96.		
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		*							Oper_	0110
									5/N _	E63
	-								Date	3/28/94
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¬		0038		GHz					Para	4.213
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CENTER 57. 0038767GHz SPAN 500. OKHZ *RBW 3. OKHz *VBW 1. OKHz



CENTER 57. 1471025GHz SPAN 500. OKHZ *RBW 3. OKHz *VBW 1. OKHz SWP 420ms

CL 30.0dB VAVG 4D MKR -96. DDdBm 'RL OdBm 10dB/ 57.4335515GHz Shop Order 43165 Oper 0110 5/N E&3 Date 3/28/98 MKR AE- 26758 57. 4335515 GHZ Para 4.2.13 -96,00 dBm Step 22 Eng. on online Temp. . 44%

CENTER 57. 4335540GHz SF *RBW 3. OKHz *VBW 1. OKHz

SPAN 500. OKHZ SWP 420ms

	30.0d DdBm	B	VAVO				-95.8		
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								5/N _	FØ3
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1	5767	775	GHz					1	6758
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CENTER 57. 5767800GHz SPAN 500. OKHZ *RBW 3. OKHZ *VBW 1. OKHZ

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RL		dBm _		10		5	7.72	20003		
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CENTER 57. 7200058GHz SPAN 500. OKHZ *RBW 3. OKHZ *VBW 1. OKHZ

L 30.0dB MKR -75.17dBm RL OdBm 10dB/ 114.580650GHz Shap Order 1431615 Oper OUD 5/N F\$3 3/08/92 MKR 26758 AE-114.580650 GHZ 4.243 -75 17 dBm 22 Step Eng. M-gelid Temp. 4400

CENTER 114.580700GHz SPAN 5.000MHz *RBW 100kHz *VBW 1.0kHz

SWP 130ms

#### Section 1B: Initial Functional Testing - F04

This section contains the results of a full functional test over temperature and under vacuum, taken before the PLO (F04) endured 6 thermal cycles.

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•		

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CONTR.	Yes (110)	SOFTWARE	NA			1105aup			amsu		
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TEST DATA SHEET 1
Equipment Calibration (Paragraph 4.2.1.1)

Test Setup Ve	rified: Signat	не			
Item	Description	Manufacturer	Model/Part Number	Calibration	Property Number
1				·	
2					
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4					
5				,	
6			[ N / 25]	F	
7		See			
8			Setups		
9	·				
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17					:
18					
19					
20					
Shop Order No operatio Unit Serial No. Date:3^	0:: 43/6/8 00: 0040 :: 1-04		Test Engineer: Quality Assurance: Govt, Rep)	· (7A); MAE	R 0 6 1998

TEST DATA SHEET 2

<b>UUT</b> Verification	and Ground Potential	s Check (Paragraphs	4.1.2.2 and 4.1.2.4)

Signature		
UUT Components	Part Number	Verify Presence
PLO faceplate	1348366-2	
VCGDO	1348351-1	
DRO	1348400-1	
Cable	1357793-4	
Filter	1357729-1	
Cable	1348430-1	
	UUT Components  PLO faceplate  VCGDO  DRO  Cable  Filter	Signature         Part Number           PLO faceplate         1348366-2           VCGDO         1348351-1           DRO         1348400-1           Cable         1357793-4           Filter         1357729-1

Cable

Cable Wires 1348430-2

1348430-3

N/A

Paragraph/		Test	Required	Measurement	Pass/
Step				Fail	
4.1.2.4					
Step 1	Potentia	al Difference			
_	From	To	Required	Measurement	
	GUNN Power Supply RTN	Varactor Power Supply RTN	< 1.0 Vac	0.01	Pass
	GUNN Power Supply RTN	DRO Power Supply RTN, +12 V	< 1.0 Vac	6.01	Page
	GUNN Power Supply RTN	DRO Power Supply RTN, -12 V	< 1.0 Vac	0.01	Pas
,	GUNN Power Supply RTN	Spectrum Analyzer 1, Chassis	< 1.0 Vac	001	Parc
į	GUNN Power Supply RTN	Spectrum Analyzer 2, Chassis	< 1.0 Vac	0,61	Par
	GUNN Power Supply RTN	Spectrum Analyzer 3, Chassis	< 1.0 Vac	0.01	Pres
}	GUNN Power Supply RTN	Synthesized Sweeper Chassis	< 1.0 Vac	0.01	Pas

Connector/Waveguide Savers Installed?

Shop Order No.: _	431618	•
operation:	0040	
Unit Serial No.:	FØ4	

Date: 3-6-98

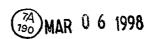
Test Engineer:

Quality Assurance GoVT, REP MAR 0 6 1998

#### TEST DATA SHEET 3 (Sheet 1 of 2) Attenuator Determination (Paragraph 4:1.2.4)

Step	Test	Expected	Measured	Pas
CtOp		Бироска		Fa
5	Recommended LO Power	8 to 11.8 dBm	Recommended Mixer LO Drive Power	N/.
			$P_{opt} = \underline{\hspace{1cm}} dBm$	
6	Initial Attenuator Setting	/.	AT1 = (DRO Output Power at A6-J1) -	N/
		N/A	(Bandpass Filter Insertion Loss) - P _{opt} = dB	
	Which dash number attenuator	-1 to -11	AT1 Selected 1331516	N/
	was chosen?	1 10-11	ATT BOLOGICA TO DE TO	- "
13	+12 V Supply Voltage	+12.0 ± 0.1 V	V ⁺ = <u>12-0</u> V	
	+12 V Supply Current	< 75 mA	I' = <u>40.5</u> mA	ค
	-12 V Supply Voltage	-12.0 ± 0.1 V	V =(2-0_V	Pay
	-12 V Supply Current	< 90 mA	Γ = <u> </u>	
14	DRO Output Frequency	6.874841 GHz	Freq _{DRO} = GHz GHz	7
	and	±24 kHz	6.47485	þ
	Power at A1-J4	11 to 15 dBm	$P_{DRO} = 11.5$ dBm	
15	Gunn Voltage	+8.5 ± 0.1 V	V _{gunn} = <u>4,5</u> V	
	Gunn Current	< 340 mA	Igunn = 196 mA	D
	Varactor Supply Voltage	5.0 ± 0.1 V	$V_{\text{var}} = \underline{\hat{s}}_{\text{v}} $ $V$	ĥ
	Varactor Supply Current	< 5 mA	$I_{var} = \underline{ .co  } mA$	
16	PLO Output Frequency and	N/A	Freq _{PLO} = 57.323 SHz 64/2	N/
	Power	17 to 20 dBm	P _{PLO} = <u>20</u> dBm	Per
18	Record IF Frequency and	2.291613 ±0.0001 GHz	IF Frequency = <u>7-29/6/</u>	
	Power	N/A	IF Power = 36. <b>?</b>	N/
20	Record IF Frequency and	2.291613 ±0.0001 GHz	IF Frequency = 2,2916/	Λ
	Power	-30 to -40 dBm	IF Power = $-36.8$	Pa

6.874841 ± .000024 GHz



5000

#### TEST DATA SHEET 3 (Sheet 2 of 2) Attenuator Determination (Paragraph 4.1.2.4)

Step	Test	Expected	Measured	· Pas
				Fa
21	LO Power Level	8.0 to 12.0 dBm	LO Drive Power	Pa
22	Record AT1 dash number	N/A	1331516- <u>6</u> ,	N/
32	Record IF Frequency and	2.291613 ±0.0001 GHz	IF Frequency = 2 29 [[	Pu
	Power	-30 to -40 dBm	IF Power = $\frac{-37.1}{}$	Pas
34	DRO Lock Alarm with 573	-4 <del>1</del> ¥	A1-FL6 = -11.6 V	Pas
	MHz Signal Off	***		به ۲

< -10 Volts

Shop Order No.:	4131618	
operation:_ Unit Serial No.:_	0040 FØU	
Date: 7-	6-98	(

Quality Assurance (190) MAR 0 6 1998

GOVT, REP.

SHEET 6 0734. MCR NO. 4675

Opin - 40-

#### TEST DATA SHEET 4

Voltage Regulator Continuity Test (Paragraph 4.1.3)

Test Setup Verified:	9151
	Signature

Paragraph 4.1.3.3, Continuity Test:

Step	From end of wire #	From end of wire #	Expected Value	Measured Value	Pass/Fail
2	A4E5	R1-2	< 1 ohm	0.1	Pass
	A4E1	R1-1	< 1 ohm	0.1	Pass

Shop Order No.:	43/6/8	
operation:	Oodo	
Unit Serial No.: _	FOU	

Date: 3-6-99

Quality Assurance:

Govt, Rop.

MAR 0 6 1998

0050

Wires

TEST DATA SHEET 5 (Sheet 1 of 5)

 Voltage Regulator	Checkout, PLC	Integration	(Paragraph 4.1.4)

N/A

Paragraph 4.1.4.1.4:

Step	From	To	Wire Color	Expected	Measured	Pass/Fail
3	Continuity Ch	eckout				
a.	A1FL1	A4E1	Red	< 1 ohm	0.1	Pass
	A1FL2	A4E3	Blk	< 1 ohm	0.2	Pass
	A1FL3	A4E7	Brn	< 1 ohm	0.1	Pass
	A1FL4	A4E2	Blu	< 1 ohm	0.1	Pass
	A1FL5	A4E4	Yel	< 1 ohm	0.1	Pass
	A1FL7	A4E9	Grn	< 1 ohm	0,2	Pass
b.	A4E6	A5VB	Gra	< 1 ohm	0.1.	Pass
	A4E10	A5RTN	Grn	< 1 ohm	0,2	Pass
	A4E2	A6FL1	Blu	< 1 ohm	0.3	Pass
	A4E4	A6FL2	Yel	< 1 ohm	0.3	Pars
	A4E8	A6FL1-E3	Grn	< 1 ohm	0.4	Pass
	· A1FL6	A6FL3	Wht	< 1 ohm	0.1.	Per
	A1J2	A5VT	Wht	Visual Verification No Measurement	N/A Dresent	Pass

Step	Test	Expected Value	Measured Value	Pass/Fail
5	Measure voltage levels	+12.0 ± 0.5 V	A1-FL4 12-13 V	ρ,,,
		-12.0 ± 0.5 V	A1-FL511.93_V	Pass
į	· ·	8.5 ± 0.5 V	A5VB _8.51_V	Puss
		+12.0 ± 0.5 V	A6FL1 +121 V	Pass
		-12.0 ± 0.5 V	A6FL2 -11.92 V	Pass

MAR 0 7 1998

M. Gdell 3-7-98.

SHEET 8 0F34 NOR NO. 1675

### TEST DATA SHEET 5 (Sheet 2 of 5) Voltage Regulator Checkout, PLO Integration (Paragraph 4.1.4)

Paragrap	oh 4.1.4.1.4 (Cont):			
Step	Test	Expected Value	Measured Value	Pass/Fail
7	Continuity Test Wire #	•		
	9	< 1.0 ohm	0.1	Pess
	10	< 1.0 ohm	0.3	Pass
	11	< 1.0 ohm	0.2	Pass
	12	< 1.0 ohm	0.2	Pass
	13	< 1.0 ohm	0.3	Pass
	14	< 1.0 ohm	0.2	Pass
9	9 Measure Supply Voltages and Currents			
	· Volt Meter 1	+15 ± 0.1 V	15.0	Puss
	Volt Meter 2	-15 ± 0.1 V	-15.0	Pass
	Current Meter 1	600 mA max	358	Pass
	Current Meter 2	100 mA max	-56	Pass
	Faceplate A1FL4	+12.0 ± 0.5 V	12.1	Diss
	Faceplate A1FL5	-12.0 ± 0.5 V	-11.9	Pass
	DRO, A6FL1	+12.0 ± 0.5 V	12.1	Pass
	DRO, A6FL2	-12.0 ± 0.5 V	-11.9	Pass
	VCGDO, A5VB	+8.5 ± 0.5 V	85	Dave

Paragraph 4.1.4.2.2:

UUT Components	Part Number	Verify Presence
UUT from Paragraph 4.1.4.1.2	N/A	V
PLL/TCXO Assembly	1358332-1	V
Cable Assembly	1348435-1	

Paragraph 4.1.4.2.4:

Step	Test	Expected Value	Measured Value	Pass/Fail
1	Potential Difference From +15 V	RTN To:		
	Spectrum Analyzer Chassis	< 1.0 Vac	0.00) VAC	Pass
	Oscilloscope RTN	< 1.0 Vac	6.001 VAC	Pass

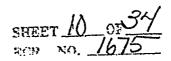


M. Opla49 3-7-98



## TEST DATA SHEET 5 (Sheet 3 of 5) Voltage Regulator Checkout, PLO Integration (Paragraph 4.1.4)

	ph 4.1.4.2.4 (Cont):			
Step	Test	Expected Value	Measured Value	Pass/Fai
3	Continuity Test			
	A1FL4 to A3FL2	< 1.0 ohm	0.\	Pos
	A1FL5 to A3FL3	< 1.0 ohm	0.1	Page
	A1FL4 to A3FL1	< 1.0 ohm	0.1	Pass
	A3FL1 to A2FL1	< 1.0 ohm	0,2	Pass
6	Voltage Measurement			1035
•	A3FL2	+12.0 ± 0.5 V	12-1	10
	A3FL3	-12.0 ± 0.5 V	-11.9	Pars
7	Repetition Rate	8 - 12 msec		Pass Pass
	Rise Time	0.9 - 3.5 msec	3.25 msec	
	Fall Time	25 usec - 2 msec		Pass Pass
8	Output Power	1 - 4 dBm	3.6 dBm	Pass
	Output Frequency	572.90344 ± 0.003 MHz	572.9043 MHz	Pass
16	Volt Meter 1	+15 ± 0.1 V	15.0 V	Pars
	Volt Meter 2	-15 ± 0.1 V	-15.0 V	Pass
	Current Meter 1	600 mA max	531 mA	
	Current Meter 2	100 mA max	57.8 MA	Pass
	PLO Lock Detect Voltage at A3FL4	0 to 1 V	54 mV	Pass
17	RF Output Frequency	57.290344 <del>CH2</del> ± <del>200 KHz</del>	57.290331GH	Pess
	RF Output Power	17 to 20 dBm	179 25 18	P.,,
18	DRO Output Frequency at A1J4	6.874841280 <del>GIIz</del> ± <del>24 NIz</del> .000024 <i>GII</i> 2	6.97484 GHZ	Pass
	DRO Output Power at A1J4	9 dBm min	11.2 1 Bm	Pass
19	Did PLO acquire the Lock?	Yes	Yes	Pass



TEST DATA SHEET 5 (Sheet 4 of 5)
Voltage Regulator Checkout, PLO Integration (Paragraph 4.1.4)

Paragrap	ph 4.1.4.2.4 (Cont):			
Step	Test	Expected Value	Measured Value	Pass/Fail
23	Test with 3 dB attenuation in I	F line (2.2 GHz) at room ambie	nt	
•	Volt Meter 1	+15 ± 0.1 V	15.0 V	Pres
	Volt Meter 2	-15 ± 0.1 V	-15.0 U	Pass
	Current Meter 1	600 mA max	532 mA	Pass
	Current Meter 2	100 mA max	-57.9 mA	Pass
	PLO Lock Detect Voltage at A3FL4	< <del>1V</del> - 0 + 1 V	47mV	Pass
	RF Output Frequency	57.290344 <del>GHz</del> ± <del>200 kHz</del>	57.210330 6Hz	Pars
	RF Output Power	17 to 20 dBm	193 Lity of han M. Ohlah 3.24.29	Pres
	DRO Output Frequency at A1J4	6.874841280 <del>GHz</del> ± <del>24 kHz</del> . 000024 G-Hz	6.87484 6Hz	Pass
	DRO Output Power at A1J4	9 dBm min	11.2 ABm	Pass
	Did PLO acquire the Lock?	Yes	Yes	Pass
24	Test with 3 dB attenuation in 1	F line (2.2 GHz) at +1°C		
	Volt, Meter 1	+15 ± 0.1 V	15.0 V	Page
	Volt Meter 2	-15 ± 0.1 V	-15:0 V	Pess
	Current Meter 1	600 mA max	5/8 un A	Pess
	Current Meter 2	100 mA max	<i>ک</i> ئاک	Reg
	PLO Lock Detect Voltage at A3FL4	· 0 % / V	53 mV	Pass
	RF Output Frequency	57.290344 <del>GHz</del> ± <del>200 kHz</del>	HE 57.210 323 231 CH	Press
	RF Output Power	17 to 20 dBm	20.0 d Bm	Pags
	DRO Output Frequency at A1J4	6.874841280 <del>GHz</del> ± <del>24 kHz-</del> . 0000 24 G-Hz	6.87485 GHZ	Pass
	DRO Output Power at A1J4	9 dBm min	11-4 dBm	Pass
	Did PLO acquire the Lock?	Yes	Yes	Pass

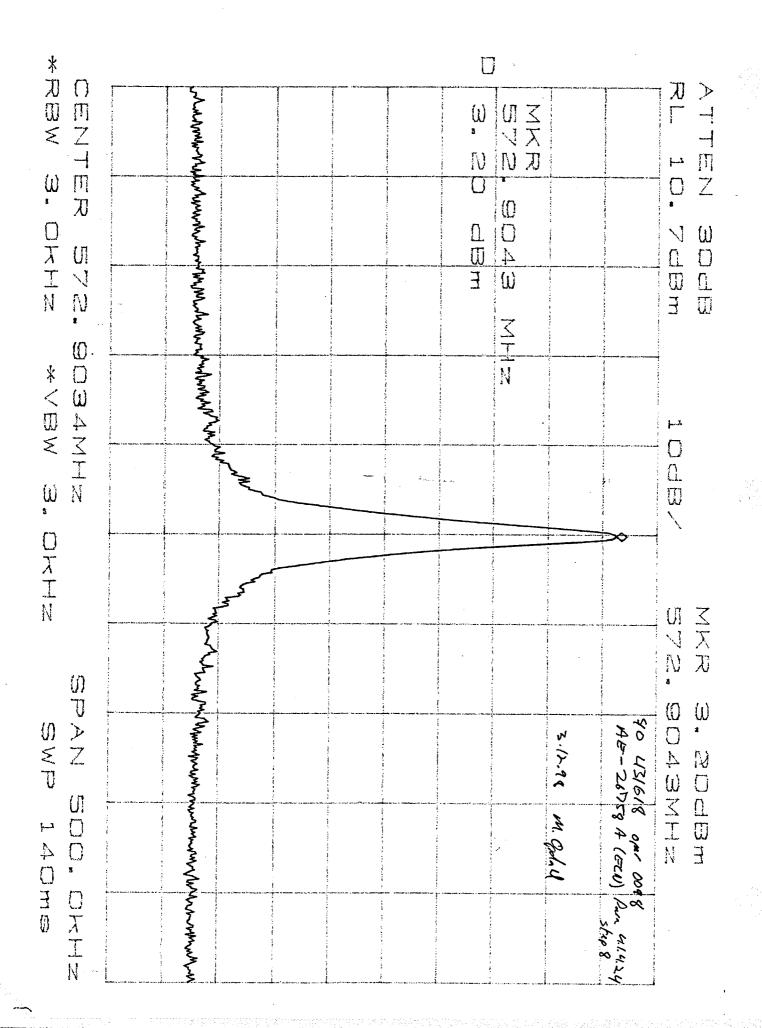


## TEST DATA SHEET 5 (Sheet 5 of 5) Voltage Regulator Checkout, PLO Integration (Paragraph 4.1.4)

• • • •

Step	h 4.1.4.2.4: Test	Expected Value	Measured Value	Pass/Fai
24	Test with 3 dB attenuation in 1	**************************************		
(Cont)	Volt Meter 1	+15 ± 0.1 V	15.0 U :	Pass
	Volt Meter 2	-15 ± 0.1 V	~15.0U	Pass
	Current Meter 1	600 mA max	541 mA	Pars
	Current Meter 2	100 mA max	59.4 m4	Pass
	PLO Lock Detect Voltage at A3FL4	0 to 1 V		Auss
	RF Output Frequency	57.290344 <del>GHz</del> ± <del>200 kHz</del>	57.210 325726	Pass
	RF Output Power	17 to 20 dBm	18.2 d Ban	Park
	DRO Output Frequency at A114	6.874841280 GHz ± 24 kHz . 000024 GHz	6.874860 GHz	Pass
	DRO Output Power at A1J4	9 dBm min	10.9 1Bm	Pass
	Did PLO acquire the Lock?	Yes	Yes	Pass
26	Test with no attenuation in IF	line (2.2 GHz) at room ambient		
	Volt Meter 1	+15 ± 0.1 V	+150 V	Acus
	Volt Meter 2	-15 ± 0.7 V	-15.00	Pres
	Current Meter 1	600 mA max	533 n 4	Pass
	Current Meter 2	100 mA max	-57.7 m A	Pag
	PLO Lock Detect Voltage at A3FL4	0 to 1 V	58 mU	Pres
	RF Output Frequency	57.290344 <del>GHz</del> ± <del>200 kHz</del>	57.290330 GHZ	Pass
	RF Output Power	17 to 20 dBm	17.3 dBm	Pess
	DRO Output Frequency at A1J4	6.874841280 <del>GHz</del> ± <del>24 KHz</del> .0000 24 G-H2	6.87484 6Hz	Pass
	DRO Output Power at A1J4	9 dBm min	11.2 dBm	Pres
	Did PLO acquire the Lock?	Yes	1/45	Page

Shop Order No.:	Test Engineer: Muk g	Land
Unit Serial No.: FØ4	Ouglity Assurance:	See 27 (25 (26 )
Date: 3-24-98	Govt, AEP. (Sign)	
Date: 3-24-98	Govt, MER.	



## TEST DATA SHEET 1 (Paragraph 4.1 Step 1 & 2)

SHOP ORDER NO.: 431618	DATE: 3.12.98
UNIT PART NO. 1344360-1	TEST ENGINEER: M. Gold L
SPD S/N:30	QUALITY ASSURANCE: A STUDY (1998) SUR 17 98

<u>ITEM</u>	DESCRIPTION	MANUFACTURER	MODEL/PART NUMBER	CALIBRATION DUE DATE	PROPERTY NUMBER
	Power Supply	Hr	62273	40411	49010
	Power Supply	Hb	611414	305m ad	uanai
	Dum	Hb	3408A	21 may 96	45771
	DUM	Hp	3478A	29 Huy 98	44871
	oun	Ho	3474A	245,114	47351
	Dun	HO	344a A	20 Feb 99	L-50931
	Dry	HP	3478A	19 Jun 99	473 <i>51</i>
	Dun	HV	3u7&A	21 Nov 98	116915
	O Scope	Tek	TDS 380	1-20-99	C0026093
	Decade Box	Ohnsych	DB 8DD	7-15-49	47168
	Affermator	TRG	V-Band	9-26-18	L-800849
	Analyzes	140	45631=	5-22-18	C00206095
	Paw Meter	Auritza	ML83A	12-8-94	L-508915
	Pour Sensor	Auntsy	MP71614	12-4-98	542Q
	Plotter	HP	7470 A	Not regist	49222

## TEST DATA SHEET 2 (Paragraph 4.1 Step 4)

			<u>.                                    </u>
TEST From +12v Power Supply RTN To	MEASURED	REQUIRED	PASS/FAIL
8566B Spectrum Analyzer Chassis	,01	< 0.1v	Deg
DVM #1 Common	,01	< 0.1v	Pag
DVM #2 Common	.01	< 0.1v	Rus
DVM #3 Common	,01	< 0.1v	Dass
DVM #4 Common	,01	< 0.1v	Pass
DVM #5 Common	.01	< 0.1v	Parc
DVM #6 Common	.01	< 0.1v	Perss
DVM #7 Common	,01	< 0.1v	Pass
Oscilloscope RTN	101	< 0.1v	Pag
SHOP ORDER NO.:_	431618	DATE: 3./2.78	
Unit S/N: F-Ø	74 Test End	GINEER: Mak Alah	el .

QUALITY ASSURANCE: NAR 17 98

#### **TEST DATA SHEET 3**

### (Paragraph 4.1)

		*				
	TEST SETUP Verified: Mach Classes SIGNATURE					
STEP	TEST	MEASURED	MEASURED AFTER C25 SOLDERED IN PLACE	Pass/Fail		
	A2E1, A2E2 Voltage Check	A2E1= -1,01 -2.64 V A2E2= -1.22 1.69 V	A2E1= -2-09 V A2E2= 1.70 V	N/A		
12 <u>to</u> 15	Calculate Percent ** Difference By ABS ((E _a -E _b )/E _a ) X 100	<u> 27 20 %</u>	2/ %	N/A		
•	Is % Difference less Than 25%			* Pass		
15, 19	Record C25 Value	C25= +0 9,5 pF	C25= 7.5 pF	N/A		
21	Decade Box Setting Minimize Voltage	N/A N/A	<u> 5640</u> Ohms - 042 V	N/A N/A		
22	Record R2 Value	N/A	R2= <del>\$\frac{1}{2}\text{O}</del> Ohms	N/A		
* REQUIREMENT = YES = PASS  ** WHERE E _a is the larger and E _b is the smaller of the measured voltages.  Unit Part No. 1344360   Unit Serial No.: FD4  Shop Order No.: 431618  Test Engineer: Mak Shall  Quality Assurance: A Hall 190 Mar 17 78  Quality Assurance: A Hall 190 Mar 17 78  Quality Assurance: A Hall 190 Mar 17 78  Page.						
	DATE: 3.12.06 TECHNICIAN: NHA Mak Chlil					

#### TEST DATA SHEET 3

#### (Paragraph 4.1)

TEST SETUP Verified: Managene					
Signature					
STEP	Test	MEASURED	MEASURED AFTER C25 SOLDERED IN PLACE	PASS/FAIL	
	A2E1, A2E2 Voltage Check	A2E1 = -9/9' V A2E2 = 1.04 V	A2E1= - 924 V A2E2= 1,09 V	N/A	
12 <u>to</u> 15	Calculate Percent ** Difference By ABS ((Ea-Eb)/Ea) X 100	<u>10.8</u> %		N/A	
	Is % Difference less Than 25%		Yes No	* Pass	
15, 19	Record C25 Value	C25= 7.8 pF	C25= 7.8 pF	N/A	
21	Decade Box Setting Minimize Voltage	N/A N/A	Ohms V	N/A N/A	
22	Record R2 Value	N/A	R2= <u>51(0</u> Ohms	N/A	
**	* REQUIREMENT = YES = PASS   * * WHERE $E_a$ is the larger and $E_b$ is the smaller of the measured voltages.				
Un	IT PART NO. <u>/3483</u>	<u>60-/</u> Unit	SERIAL NO.: FP4	<del></del>	
SH	Shop Order No.: 43/6/8				
TES	TEST ENGINEER: TA 1268 aug 95 98				
Qu	ALITY ASSURANCE:	£68 NT 32 A8			
DA [*]	TE: 3.73.98	ТЕСН	NICIAN: What Plak	<u></u>	

## TEST DATA SHEET 4 (Paragraph 4.1)

STEP	TEST	Measured		EXPECTED	PASS/FAIL
25	Voltage Measurement	A2E1= -1.40 A2E2= 2.13	_V	N/A	N/A
			_v _v	<b>k</b>	
28	Voltage Measurement	A2E1= -/. 2/ A2E2= 2.us	_v _v	N/A	N/A
		Sum: .098	v		
29	a) +15v voltage +15v current -15v voltage -15v current	-(2.0)	V nA V nA	+15v ± 0.1v 600 mA max -15v <u>+</u> 0.1v 100 mA max	Dass.
	b) 57.290344GHZ RF output	dE	Bm	18.5dBm <u>+</u> 1.5dB	19.1 Pass
	c) 6.87GHz RF output	dB	3m	12dBm <u>+</u> 2.0dB	Pass

UNIT PART NO. 1348360-1	SHOP ORDER NO.: 43/6/8
UNIT SERIAL NO.: F04	TEST ENGINEER: Mak Glahl
DATE: 3.16.98	QUALITY ASSURANCE: MAR 17 98 (7A) A J

Returned 3123198.

Information on this page no longer valid see

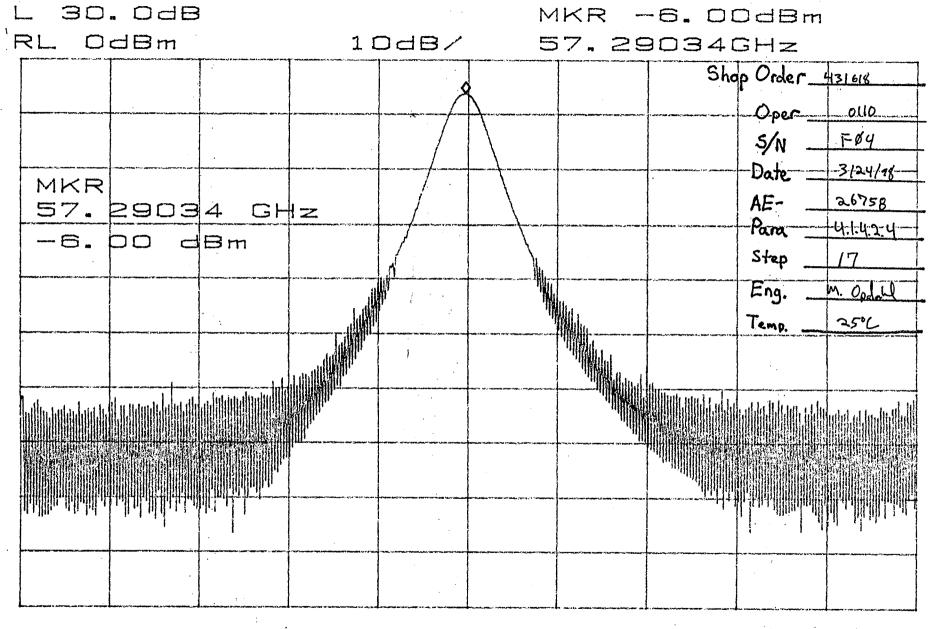
Next page

#### **TEST DATA SHEET 4**

#### (Paragraph 4.1)

STEP	TEST	MEASURED	EXPECTED	PASS/FAIL
25	Voltage Measurement	A2E1=7 <b>3</b>	N/A	N/A
28	Voltage Measurement	A2E1= -, \$/2 V A2E2= 1. 48 V Sum: 063 V	N/A	N/A
29	a) +15v voltage +15v current -15v voltage -15v current	+15.0 V 532 mA -15.0 V -57.9 mA	-15v <u>+</u> 0.1v	Pess
	b) 57.290344GHZ RF output		18.5dBm ± 1.5dB	Pass
	c) 6.87GHz RF output	dBm	12dBm ± 2.0dB	Page

UNIT PART NO. /348360-1	SHOP ORDER NO.: 43/6/8
Unit Serial No.: FP4	TEST ENGINEER:
DATE: 323.78	QUALITY ASSURANCE: 268 MR 25 19



CENTER 57.29037GHz

*RBW 300kHz VBW 300kHz

SPAN 10.00MHz SWP 50.0ms

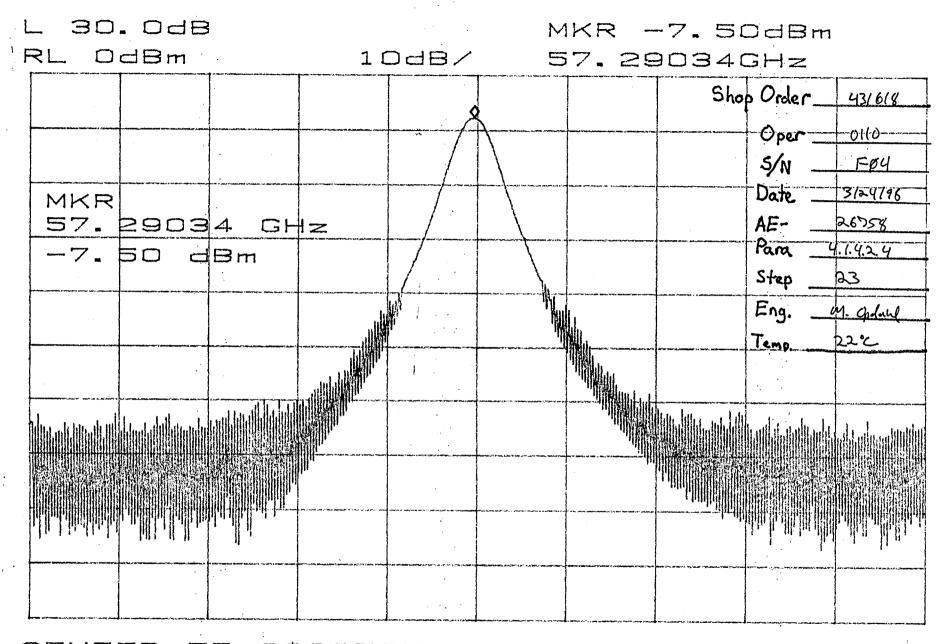
ATTEN 30dB MKR 9.57dBm RL 12.9dBm 10dB/ 6.87487GHz Shop Order 431 618 Oper 0110 F84 5/N Date 3/24/48 MKR 26758 AE-6.87487 GHZ Para 4.1.4.24 9.57 dBm Step 18 Eng. M. Opplatel Temp. 254

CENTER 6.87484GHz SF *RBW 300kHz VBW 300kHz

SPAN 10.00MHz SWP 50.0ms

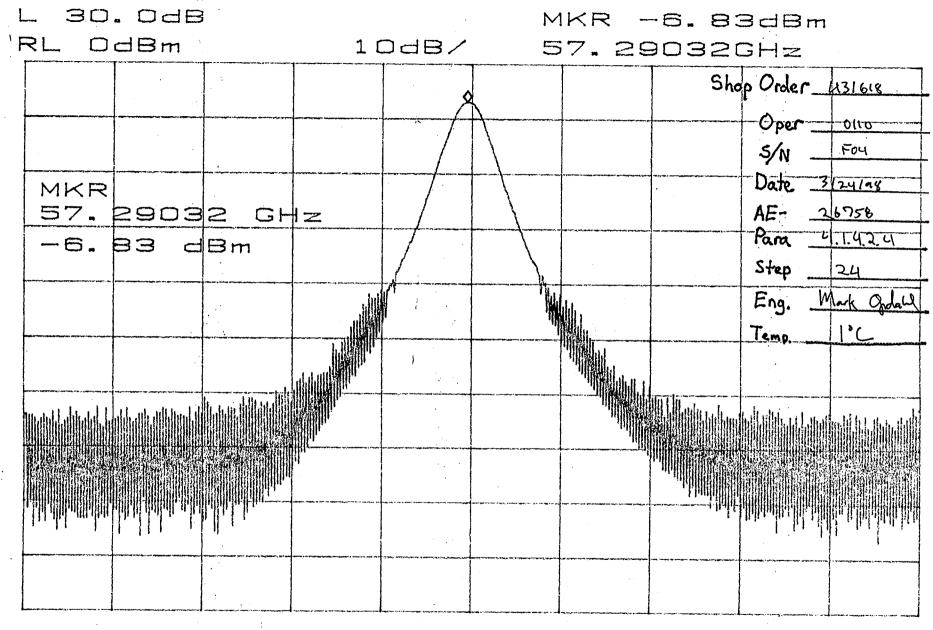
ATTEN 300B MKR 9.73dBm RL 12.9dBm 10dB/ 6.87487GHz Shop Order 431618 Oper 0110 FØY 5/N Date-3124198 MKR 36758 AE-6.87487 GHZ 4.1.4.2.4 Para 9.73 dBm Step 23 Eng. M. Opling Temp. 2200 CENTER 6.87484GHz SPAN 10. DOMHZ

*RBW 300kHz VBW 300kHz SWP 50.0ms



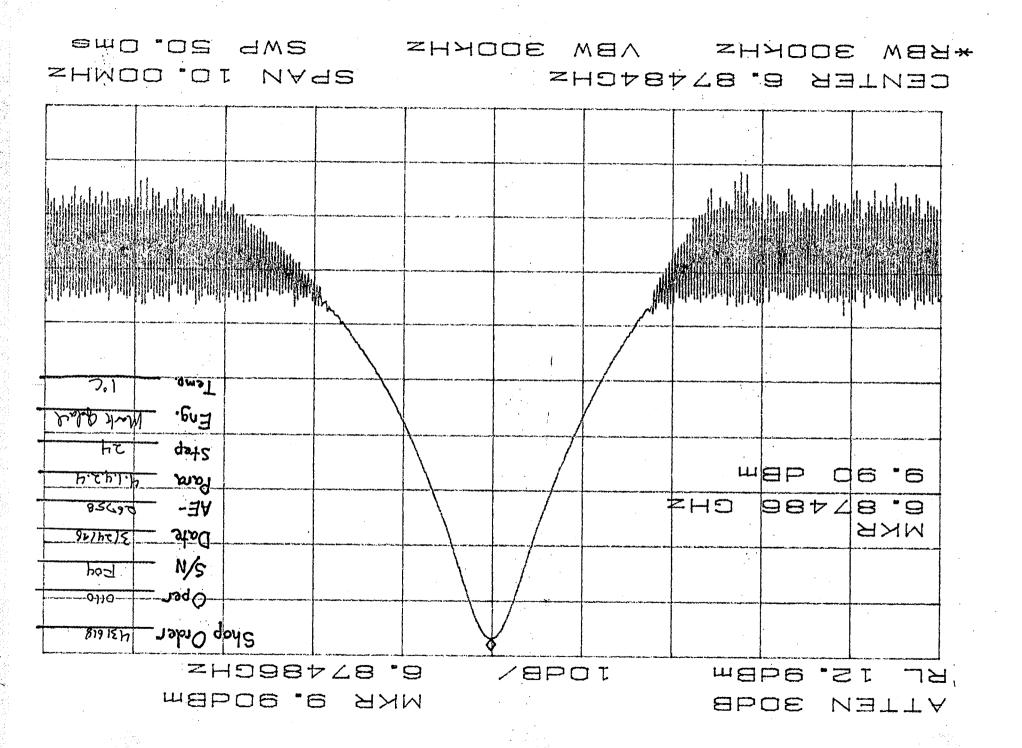
CENTER 57. 29037GHz SP *RBW 300kHz VBW 300kHz

SPAN 10.00MHz SWP 50.0ms



CENTER 57. 29037GHz SPAN 10. DOMHZ

*RBW 300kHz VBW 300kHz SWP 50.0ms

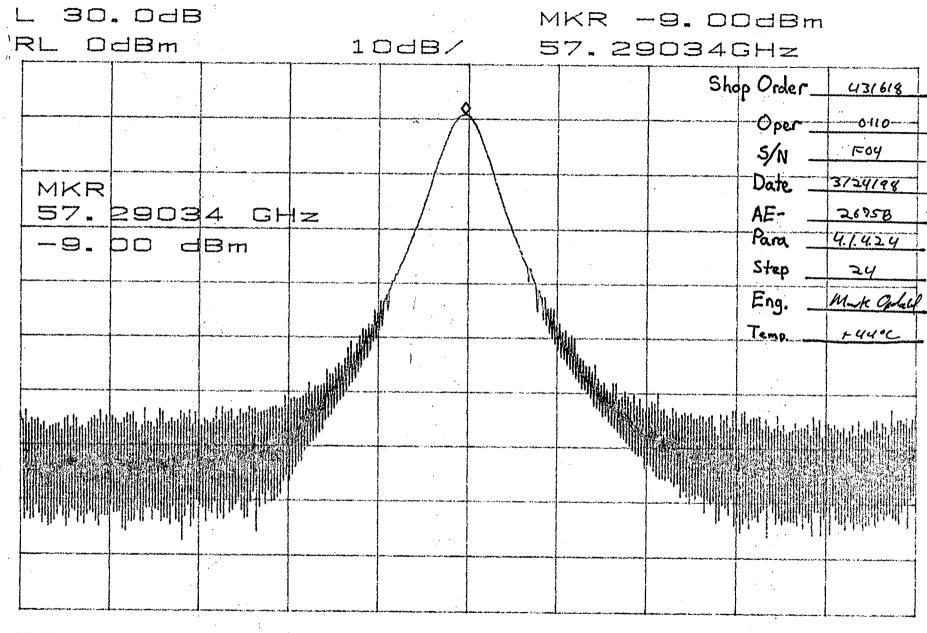


ATTEN 300B MKR 9.40dBm 'RL 12.9dBm 10dB/ 6.87487GHz Shop Order 431618 Oper 0110 1-04 S/N Date 3/24/14 MKR AE-26758 6.87487 GHZ Para 4.1.4.2.4 9.40 dBm Step . 24 Eng. Mark adult Temp. +4400

CENTER 6.87484GHz

*RBW 300kHz VBW 300kHz

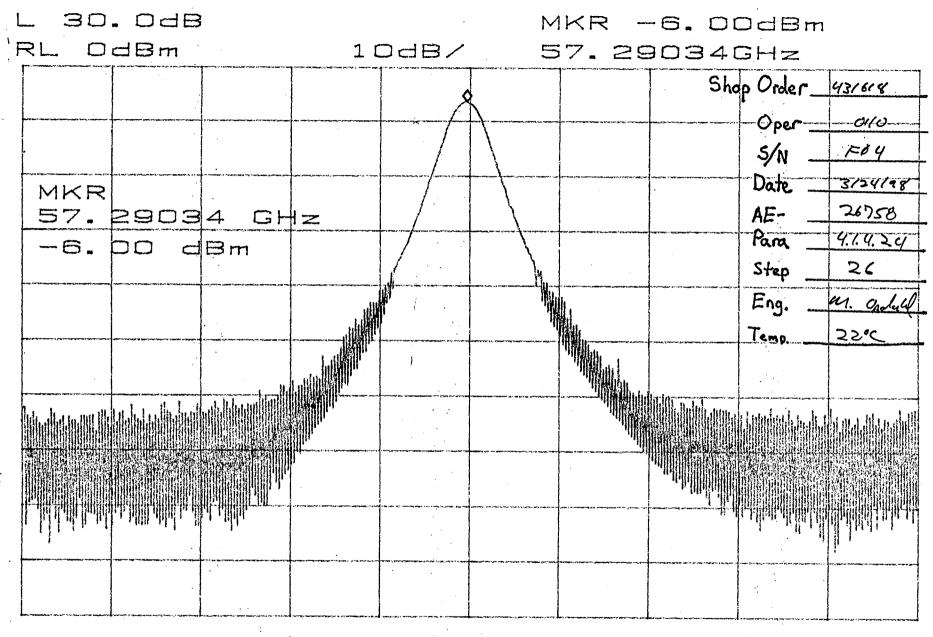
SPAN 10. DOMHZ SWP 50. Dms



CENTER 57. 29037GHz

*RBW 300kHz VBW 300kHz SWP 50.0ms

SPAN 10.00MHz SWP 50.0ms



CENTER 57. 29037GHz

*RBW 300kHz VBW 300kHz

SPAN 10. DOMHZ SWP 50.0ms

ATTEN 304B MKR 9. 40dBm 'RL 12.9dBm 10dB/ 6.87487GHz Shop Order 431618 Oper --0110-5/N F04 3/24/98 Date MKR AE-26758 6.87487 GHZ 4.7.4.2.4 Para 9.40 dBm Step 26 Eng. M. Opdabl Temp. ععور

CENTER 6.87484GHz SPAN 1 *RBW 300kHz VBW 300kHz SWP

SPAN 10. DOMHZ SWP 50. Dms

SHEET 12 0134

6BA

TEST DATA SHEET & (Sheet 1 of 4) Functional Testing (Paragraph 4.2.1)

Fest Setup Ventred.

Signature

PRE-Environmental CPT

Par	agraph	4.2.1.3,	Function	al Testing:	

*	pir vibirio, r directonar resums.			
Step	Test	Expected	Measured	Pass/Fail
1	Potential Difference from ± 15	V RTN to:		
	PLO Base Plate	< 1.0 Vac	-005	Pass
	Spectrum Analyzer	< 1.0 Vac	.005	Pass
	Frequency Counter Chassis	< 1.0 Vac	.004	Pass
	Power Meter Chassis	< 1.0 Vac	007	Pass
4	Evacuate vacuum chamber and record pressure	<10°2 torr	Pressure = torr NIA Ambient	NAS
5	Thermal couple readings	TC1 = 22 ± 2 °C	TC1= 22.54 °C	Auss
			TC2= Z2.9°C°C	N/A
			TC3=Z/, \( \)	N/A
6	DRO L/A	~170%/V	DRO L/A =057_ V	Pass
•	PLO L/A	44061V	PLOL/A = <u>.0 4</u> V	Pass
	Is PLO locked?	Yes	YesX	
١.		.0002 64	2No	Pass
7	PLO Frequency	57.290344 GHz ± 200 kHz	Freq. = <u>57.290332 676</u> GHz	Pass
	PLO Power	17 to 20 dBm	P = <u>19.5</u> dBm	Pass
8	Input Voltage and Current			
	VM1 Voltage	+15 ± 0.1 V	VM1 = +15.0 V	Press
	VM2 Voltage	-15 ± 0.1 V	$VM2 = \underline{-15.0}V$	Pass
	IM1 Current	600 mA max.	IM1 = 529 mA	Pass
	IM2 Current	100 mA max.	IM2 = 52. 4 mA	Pars
	DRO L/A Voltage	«IV-0 % / V	DRO L/A = _ <u>57 m</u> V	Pass
	PLO L/A Voltage	- 14 0 61V	PLO L/A = 40 mV	Pass
12	RF Output Power and	17 to 20 dBm. 0002 64	P = 19.5 dBm	Auss
	Frequency	57.290344 GHZ± <del>200 kHz</del>	Freq. = 57. 290332 845 GHz	Pass
	Baseplate Temp. (TC1)	TC1 = 22 ±2°C	TC1= 22.4 °C	Pass
13	Frequency vs. Voltage			
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = $\frac{\tau/5.20}{V}$	Pass
		-15.2 ± 0.05 V	Voltage = - (5.20 V	Pess
		57.290344 GHz ± 200 kHz	Freq. = <u>67.290 332 965</u> GHz	Pass
		17 to 20 dBm	$P = \underline{/9.5} dBm$	Pres

It Record date only if performing test under vacanon.

-stet

CBA
TEST DATA SHEET 8 (Sheet 2 of 4)
Functional Testing (Paragraph 4.2.1)

	ph 4.2.1.3 (Cont):	Pre-Environmental CA	7	D		
Step	Test	Expected	Measured	Pass/Fai		
14	Frequency vs. Voltage					
-	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage = $+ (U.Q.)$ V	Priss		
		-14.8 ± 0.05 V 0002 a	$\sqrt{2} \text{Voltage} = \frac{-14.81}{2} \text{V}$	Pass		
		57.290344 GHz ± <del>200 kHz</del>	Freq. = 57. 290322 966 GHz	Pass		
		17 to 20 dBm	P = <u>[4.5</u> dBm	Pres		
15	Spurious and Sub	-200 ≠ -90 dBc	Su plots	Pass		
16	Power level of 114.58 GHz	<-10 dBm	Power of 114.58 GHz			
	signal			Pass		
17	Load VSWR and Frequency F	Pulling	•			
	2:1 mismatch over 1λ	N/A	Worst Case Freq =	N/A		
	2:1 mismatch over 1λ	N/A	Worst Case Power =	N/A		
•	21.2	1441	dB Peak			
18	Operating Temperature	TC1 = 1 ±2°C		Pass		
	@ 1°C baseplate	101-1220	1.7	N/A		
	e i C basepiate		1,00	N/A		
	•	0.111	0.70			
	<b>√</b> {	0 - 1V	DRO L/A = 46 mV	Pass		
19	1 1 C	0 - 1V	PLO L/A = 41 mV	Pacs		
19	Input Voltage and Current		Tractice of the state of the st			
	VM1 Voltage	+15 ± 0.1 V	$VM1 = \underbrace{r_1 C \cdot 0}_{C \cap C} V$	Parx		
	VM2 Voltage	-15 ± 0.1 V	VM2 = V	المحرد		
	IM1 Current	600 mA max.	IM1 = 517 mA	Pass		
	IM2 Current	100 mA max.	IM2 = <u>\$C</u> mA	Pass		
	DRO L/A Voltage	<14 0 % 1	DRO L/A = 46 mV	Pars		
	PLO L/A Voltage	SIV 0 601	PLOL/A = 41 mV	Dass		
	RF Output Power	17 to 20 dBm ,0002 Cf	Power = $\frac{20}{}$ dBm	Pass		
	Frequency	57.290344 GHz ± <del>200 kHz</del>	Freq. = \$7, 290 314 469 GHz	Pars		
	Frequency vs. Voltage					
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = <u>15.2</u> V	Dass		
		-15.2 ± 0.05 V	-Voltage = 15.2_V	Pass		
		57.290344 GHz ± 200 kHz	Freq. = 57.290318 495 GHz	Pacs		
		17 to 20 dBm	Power =2_0dBm	Pars		
	Frequency vs. Voltage	1	<u>L </u>	1 1 2 2		
	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage =	Pass		
			$-Voltage = -\frac{14.8}{2}V$	Pass		
		57.290344 GHZ ± 200 kHz	Freq. = 57.290 318 635 GHz			
	<b>,</b>	31.230344 SAIZ E 200 KIIZ	Power = 20 dBm	Pass		

# 6BA TEST DATA SHEET 6(Sheet 3 of 4) Functional Testing (Paragraph 4.2.1)

		Post Thered Cycling Et	27.	
	ph 4.2.1.3 (Cont):	Pre-Environmental C		
Step	Test	Expected	Measured	Pass/Fail
19	Spurious and Sub	-200 % -90 dBc	See Plots	Pas
(Cont)	Power level of 114.58 GHz signal	<-10 dBm	Power of 114.58 GHz = C	
			dBm	Pass
	Load VSWR and Frequency F			
	2:1 mismatch over 1λ	N/A	Worst Case Freq =	NA
	2:1 mismatch over 1λ	N/A	Worst Case Power =dB Peck	N/A
21	Operating Temperature	TC1 = 44 ±2°C	TC1 = 44,4 °C	Pass
	@ +44°C Baseplate		TC2= 45.1°C	N/A
			TC3 = 44.5° C	N/A
		0 - 1V	DRO L/A = 107 mV	Pess
		0 - 1V	PLO L/A =	Pass
22	Input Voltage and Current			
	VM1 Voltage	+15 ± 0.1 V	VM1 = <u>/5.0</u> V	Pass
	VM2 Voltage	-15 ± 0.1 V	VM2 = V	Pass
	IM1 Current	. 600 mA max.	IM1 = 54/ mA	Pres
į	IM2 Current	100 mA max.	IM2 = 5% c/ mA	Pars
	DRO L/A Voltage	414061V	DRO L/A = 104 mV	Pass
	PLO L/A Voltage	C14061V		Pass
	RF Output Power and	17 to 20 dBm 0012 64	Power = <u>18.4</u> dBm	Pass
	Frequency	57.290344 GHz ± <del>200 kHz</del>	Freq. = 57. 290 327 58 GHz	Pares
	Frequency vs. Voltage			
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = <u>15.2</u> V	Pas
		-15.2 ± 0.05 V cas 2 6	-Voltage = /5.2_V	Pass
		57.290344 GH2 ± 200 kHz	Freq. = 57, 210 327 WGHz	Pass
		17 to 20 dBm	Power = 19.4 dBm	Puss
	Frequency vs. Voltage	<u> </u>		
	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage =	Pass
		-14.8 ± 0.05 V		Puss
		57.290344 GHz ± 200 kHz	Freq. = 57. 200 32761GHz	Pass
		17 to 20 dBm	Power =	Pass
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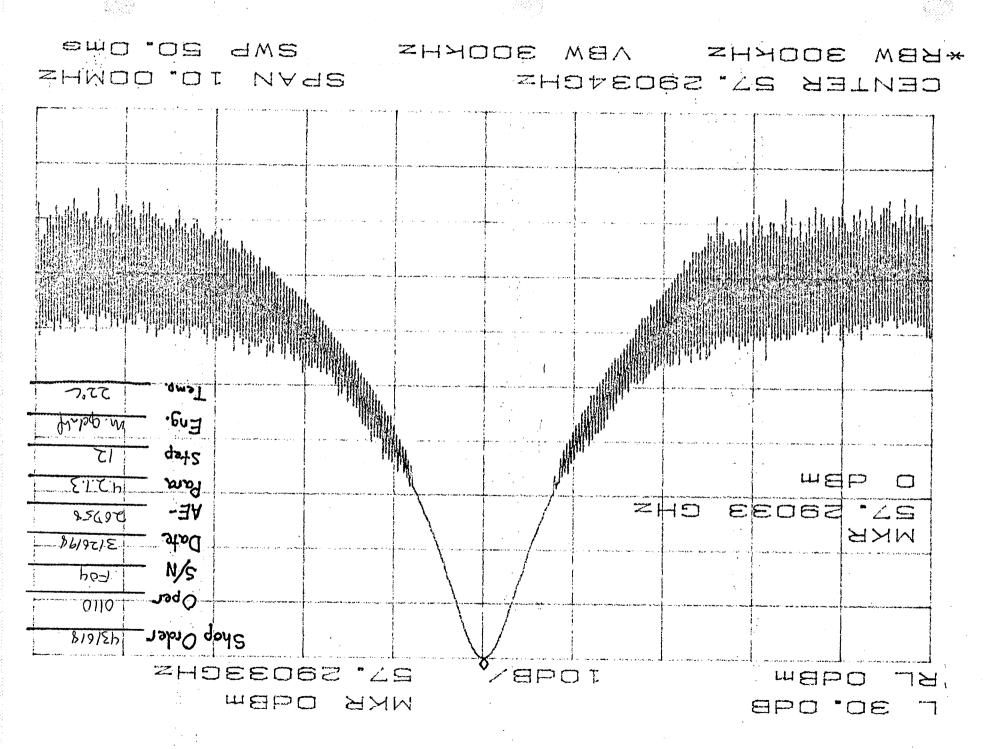
## TEST DATA SHEET & (Sheet 4 of 4) Functional Testing (Paragraph 4.2.1)

Paragra	ph 4.2.1.3 (Cont):	Post Throat Excling	CPT		
Step	Test	Expected	Measured	Pass/Fail	
22	Spurious and Sub	-200 % -90 dBc	See Plots	Pass	
(Cont)	Power level of 114.58 GHz signal	<-10 dBm	Power of 114.58 GHz = -67 dBm	Pass	
	Load VSWR and Frequency Pulling				
	2:1 mismatch over 1λ	N/A	Worst Case Freq = /0 Hス	N/A	
	2:1 mismatch over 1λ	N/A	Worst Case Power =	N/A	

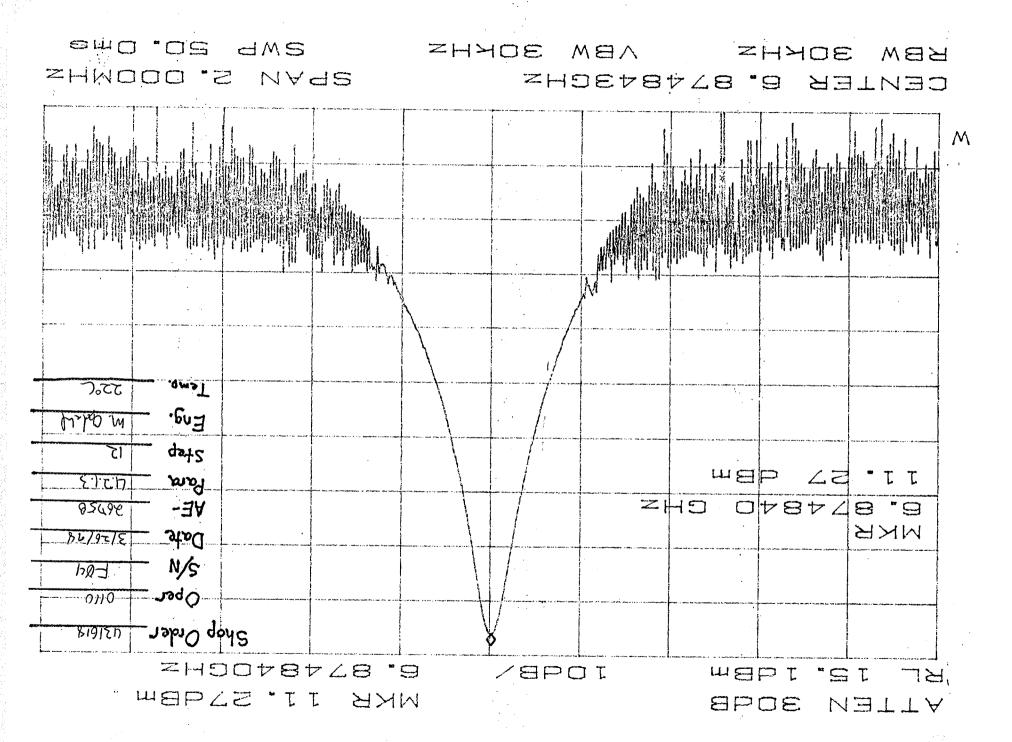
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Unit Serial No.:	FØY	

Quality Assurance:

Quality Rep ( 420-18)



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CENTER 56.8605581GHz SPAN 500.0kHz

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CENTER 57. 1470747GHz SPAN 500. DKH2

*RBW 3. DKHz *VBW 1. DKHz SWP 420ms

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CENTER 57. 4335913GHz

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SPAN 500. OKHZ SWP 420ms

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CENTER 57. 5768496GHz SPAN 500. OKH2

*RBW 3. DKHz *VBW 1. DKHz SWP 420ms

*RBW 3. OKHz *VBW 1. OKHz SWP 420ms SHAO DOS NAGS CENTER S7. 7201079GHz [cmp. 93°C Eng. W. Orland 31 gat 2 MBD 88 196ran 5.1.6.7 ZHO SY. PRO1071 YE-85696 MKR 13/56/18 Date NS h0-1 (110 0 K Oper Shop Order 43164 SY, 7201051 GHz 109BX ~ U 원 P O TIN, MKR -96, 33dBm 99 D/A/ 30° 09B

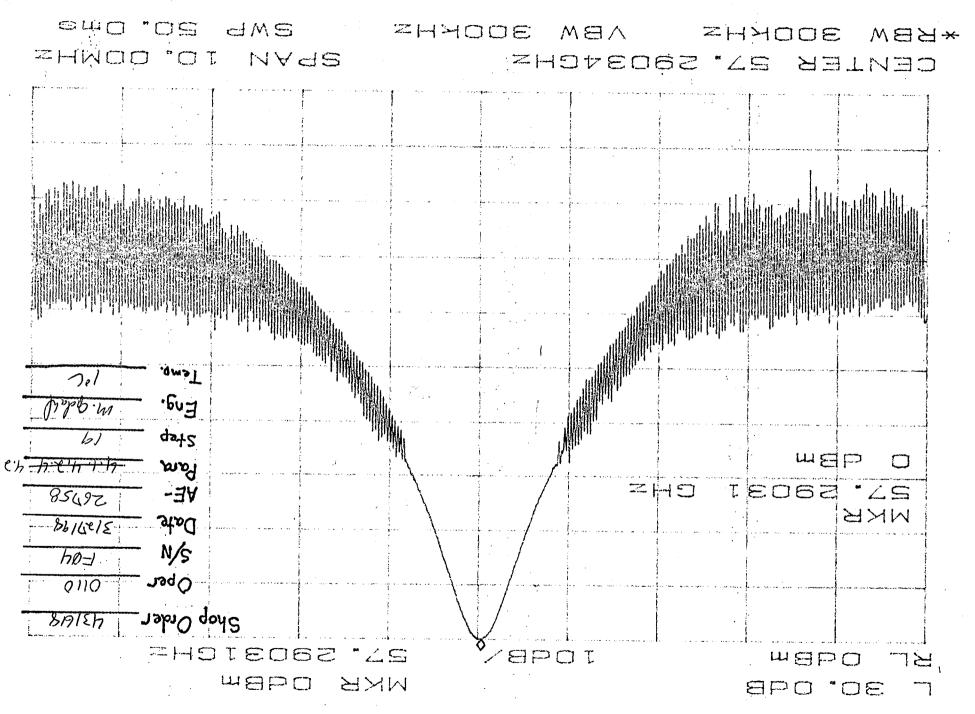
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CENTER 114.580700GHz

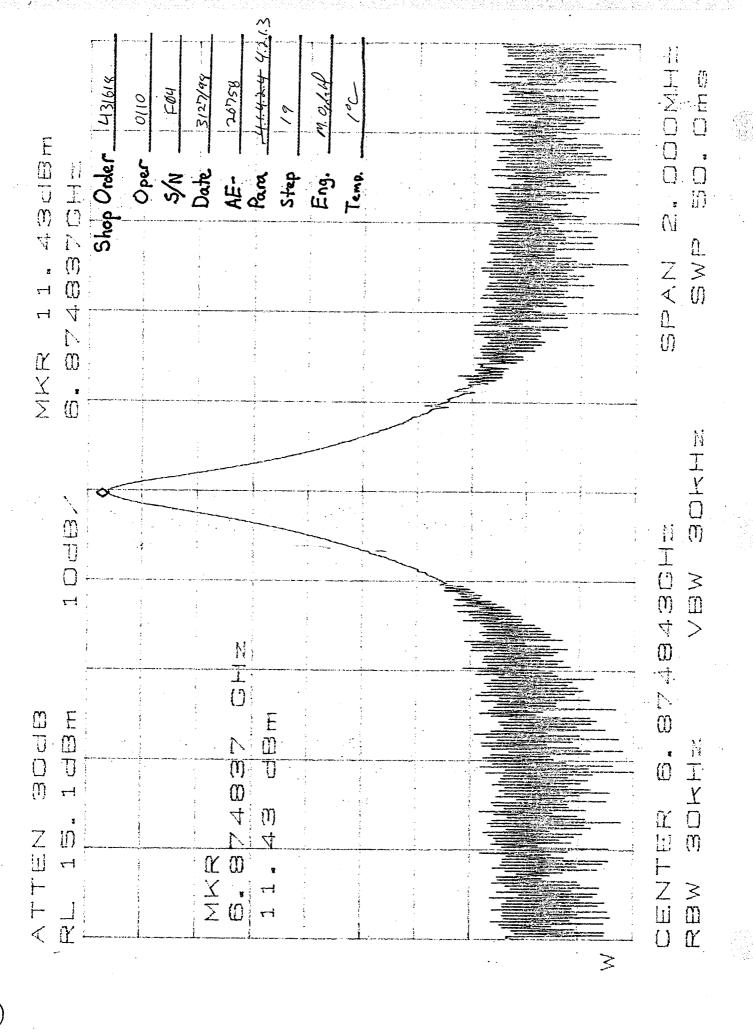
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CENTER 57. COBS673GHz SPAN 500. OKHS

*RBW 3. DKHz *VBW 1. DKHz SWP 420mb

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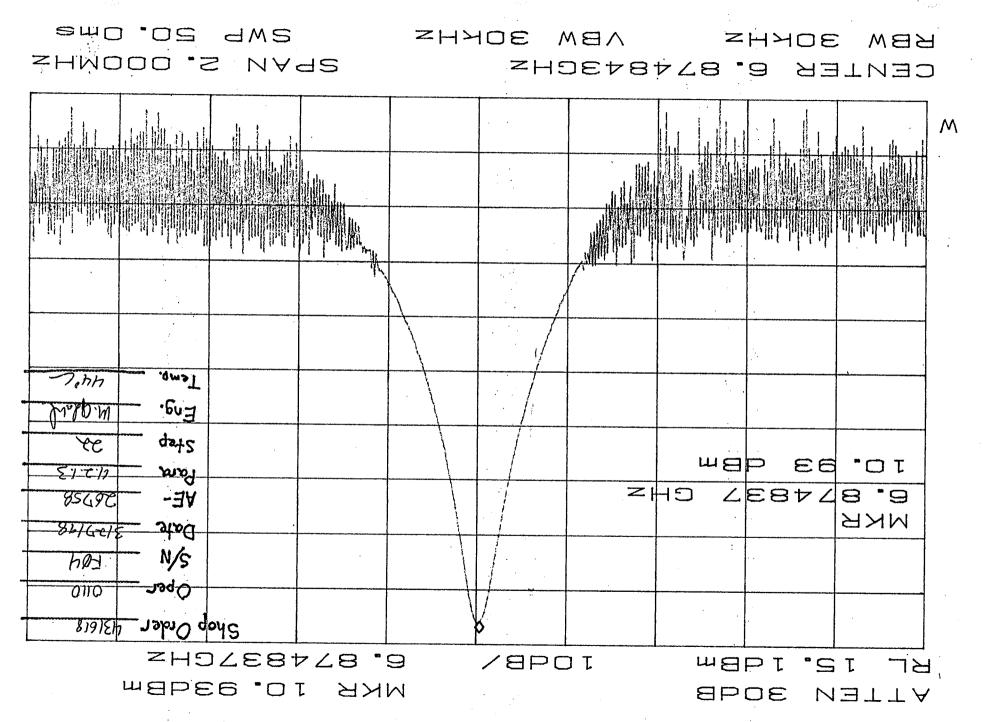
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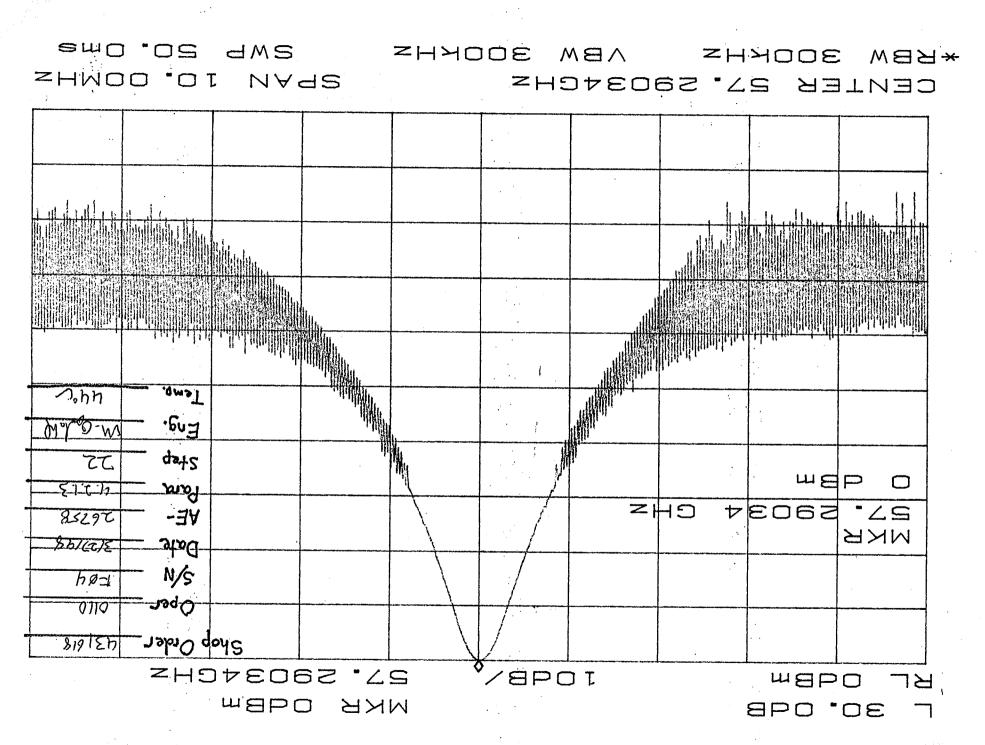
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CENTER 56.8606500GHz SPAN 500.0KHz

*RBW 3. OKHz *VBW 1. OKHz SWP 420ms

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CENTER 57. 1471020GHz SPAN 500. OKHZ

*RBW 3. OKHz *VBW 1. OKHz SWP 420ms

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CENTER 57. 4335530GHz SPAN 500. OKHZ *RBW 3. OKHZ *VBW 1. OKHZ

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CENTER 57.5767790GHz SPAN 500.0kHz *RBW 3. OKHz *VBW 1. OKHz SWP 420ms

*KBW 3. OKHZ *VBW 1. OKHZ SWP 420ms SPAN 500. OKHZ CENTER 57, 7199963CHZ may make a faction of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the seco .qmsT Tonh E03. m-and 72. 9272 87.C.P Tang ZHD E966614 45 85692 -∃¥ CENTER 15/148 Date NS hØ=1 Oper-ाग Shop Order 43/6/4 27.7199963CHz 109B\ "RL Odem CL 30, 0dB VAVG 17 MKR -97, 67dBm

L 30.0dB MKR -67, 17dBm 'RL OdBm 10dB/ 114.580667GHz Shap Order 431618 0110 Oper F-64 5/N 3127/99 Date MKR AE-26758 114.580667 GHZ 4.2.1.3 Para -67 17 dBm Step 22 m- golal Eng. Temp. +446

CENTER 114.580700GHz

*RBW 100kHz *VBW 1.0kHz

SPAN 5. DODMHz kHz SWP 130ms

### Section 2A: Vibration - F03

Following is the data taken after acceptance level vibration testing for PLO SN F03.

Test	Expected Value	Post X axis	Post Y axis	Post Z axis
Output Frequency	57.290344 GHz ±	57.290327	57.290329	57.290330
	200 kHz	GHz	GHz	GHz
Output Power	18.5 dBm ± 1.5 dB	19.13	19.21	19.21

Both the frequency span of 300 Hz and the power difference of 0.08 dB are considered to be changes not brought about by vibration stresses, but rather from experimental error.

The following pages contain the raw data further describing the test and the results for the tests on PLO F03.

(6) (2) (3) (3)				
•			·	

AE-26758A 21 Jan 98

- I		Test		Required	Magazzamont	Pass/Fa
Step	D	lest		Required	Measurement	Pass/Fa
3 1	Potential Difference	To				
ļ	From	Test Platform *		< 1.0 Vac		11 (0 4
L	Power Supply RTN	Frequency Counter Chassi		< 1.0 Vac	Not used	N/A*
L.	Power Supply RTN	Power Meter Chassis		< 1.0 Vac	0.005 VAC	Aus
	Power Supply RTN	Power Meter Chassis		< 1.0 vac	0.004 UAC	Pass
Step	Test	Expected	I	Mea	sured	Pass/Fa
8	Voltage Meter 1	+15 ± 0.1 V		+15.	<u>ov</u>	Pars
	Voltage Meter 2	-15 ± 0.1 V		-15	:0_V	Pass
	Current Meter 1	600 mA max.		_51	gmA	Pass
	Current Meter 2	100 mA max.	CHO	66	<del>-</del>	Priss
9		100 mA max.	642	_66	mA	Price
10	Output Frequency Output Power  N/A this line entry if not u	100 mA max. 2002 57.290344 CHZ ±100 kHz 18.5 dBm ±1.5 dB sed in test. Example: If PLO is the shaker table and power suppli-	to be vibr	_66 29032 18	mA equo GHz g.q. LBm	Proces Proces
10 f used.	Output Frequency Output Power  N/A this line entry if not u	57.290344 CHZ ±100 kHz  18.5 dBm ±1.5 dB  sed in test. Example: If PLO is t	to be vibr	_66 29032 18	mA equo GHz g.q. LBm	Proces Proces
10	Output Frequency Output Power  N/A this line entry if not u	57.290344 CHZ ±100 kHz  18.5 dBm ±1.5 dB  sed in test. Example: If PLO is t	to be vibr	_66 29032 18	mA equo GHz g.q. LBm	Proces Proces
10	Output Frequency Output Power  N/A this line entry if not u	57.290344 CHZ ±100 kHz  18.5 dBm ±1.5 dB  sed in test. Example: If PLO is t	to be vibr	_66 29032 18	mA equo GHz g.q. LBm	Proces Proces
10	Output Frequency Output Power  N/A this line entry if not u	57.290344 CHZ ±100 kHz  18.5 dBm ±1.5 dB  sed in test. Example: If PLO is t	to be vibr	_66 29032 18	mA equo GHz g.q. LBm	Proces Proces
10	Output Frequency Output Power  N/A this line entry if not u	57.290344 CHZ ±100 kHz  18.5 dBm ±1.5 dB  sed in test. Example: If PLO is t	to be vibr	_66 29032 18	mA equo GHz g.q. LBm	Proces Proces
10	Output Frequency Output Power  N/A this line entry if not u	57.290344 CHZ ±100 kHz  18.5 dBm ±1.5 dB  sed in test. Example: If PLO is t	to be vibr	_66 29032 18	mA equo GHz g.q. LBm	Proces Proces

### **TEST DATA SHEET 8**

Limited Functional Test (Paragraph 4.2.3)

Test Setup Verified:_	H. Haif
	Signature

Paragraph 4.2.3.2:

Step		Test	Required	Measurement	Pass/Fail
3	Potential Difference	• .			
	From	То			
•	Power Supply RTN	Test Platform *	< 1.0 Vac		NIA
	Power Supply RTN	Frequency Counter Chassis	< 1.0 Vac	.09mV	2
	Power Supply RTN	Power Meter Chassis	< 1.0 Vac	.09 mV	P

Step	Test	Expected	Measured	Pass/Fail
8	Voltage Meter 1	+15 ± 0.1 V	/497_v	P
	Voltage Meter 2	-15 ± 0.1 V	-/5.00 V	P
	Current Meter 1	600 mA max.	_5/7_mA	10
Γ	Current Meter 2	100 mA max.	66rZ3mA	P
9	Output Frequency	57.290344 GHz ±100 kHz	57.2903276HZ	1
10	Output Power	18.5 dBm ±1.5 dB	19.13 dby	1

* If used. N/A this line entry if not used in test. Example: If PLO is to be vibrated and unit tested "in-place" after each axis, check potential difference between shaker table and power supply RTN.

"X" AXIS

Shop Order No.: <u>431615</u>	Test Engineer:
Unit Serial No.: F03	Quality Assurance: 4/7/98
Date: 4/7/18	DCMC: 4/7/98

TEST	DATA	SHEET	8

		TEST DATA SHEET  /Limited Functional Test (Paragra			
Test S	etup Verified: // Horf				
Paragr	raph 4.2.3.2:			•	
Step		Test	Required	Measurement	Pass/Fail
3	Potential Difference				
	From	To			
	Power Supply RTN	Test Platform *	< 1.0 Vac	······································	N/A-
	Power Supply RTN	Frequency Counter Chassis	< 1.0 Vac	.2/V	P
	Power Supply RTN	Power Meter Chassis	< 1.0 Vac	111	P
·	•				
Step	Test	Expected	Mea	sured	Pass/Fail
8	Voltage Meter 1	+15 ± 0.1 V	14.4	v	P
	. Voltage Meter 2	-15 ± 0.1 V	-150	3_v	P
	Current Meter 1	600 mA max.	51	mA	P
	Current Meter 2	100 mA max.	_66.	2_ mA	P
9	Output Frequency	57.290344 GHz ±100 kHz	57,2903	296HZ	P
10	Output Power	18.5 dBm ±1.5 dB	19.2		P
		ed in test. Example: If PLO is to be not shaker table and power supply R		it tested "in-pláce'	' after each
	·		-A 11		
_	rder No.: <u>43/6/5</u>	Test Engine  Quality Ass	724	4/7/98	
Date:	4/7/98	DCMC:	<b>*</b> 4	4/7/98	

## TEST DATA SHEET 8 Limited Functional Test (Paragraph 4.2.3)

Step		Measurement	1 D		
	Potential Difference	Test	Required	Measurement	Pass/Fa
F	From			ļ	
-	Power Supply RTN	To Test Platform *	< 1.0 Vac		<del>  , ,</del>
<u> </u>	Power Supply RTN		< 1.0 Vac		NI
j	Power Supply RTN	Frequency Counter Chassis Power Meter Chassis		,112	12
E	rower Supply KTN	Power Meter Chassis	< 1.0 Vac	126×	P
Step	Test	Expected	Mea	sured	Pass/Fai
8	Voltage Meter 1	+15 ± 0.1 V	14.9	9 v	1 255/1 20
Ĭ.	Voltage Meter 2	-15 ± 0.1 V	74.77 V		-
	Current Meter 1	600 mA max.			
ŀ	Current Meter 2	100 mA max.			7
	Current Meter 2		_66.17_mA F		
	Output Eraguanes				· ~/
9	Output Power	57.290344 GHz ±100 kHz	57.29033		P
used.	Output Power  N/A this line entry if not us k potential difference between	57.290344 GHz ±100 kHz  18.5 dBm ±1.5 dB  ed in test. Example: If PLO is to be a shaker table and power supply R	19.216 e vibrated and un	lbm ;;	
used.	Output Power  N/A this line entry if not us	18.5 dBm ±1.5 dB	19.216 e vibrated and un	lbm ;;	

## GENCORP AEROJET

# AZUSA OPERATIONS INTEROFFICE MEMO

TO:

D. R. Pines

**DATE:** 08 - Apr -1998

plovibtest3#279.doc

FROM:

R. J. Heffner

170:8611:98#279

**SUBJECT:** 

AMSU-A Phase Lock Oscillator (PLO) Acceptance Vibration Testing of P/N

1348360-1, S/N's F03 and F04

**COPIES TO:** 

D. F. Brown, R. V. Hauerwaas, L.T. Paliwoda, P. K. Patel, S. W. Reynolds.

D.L. Tran, Writer, File

### **REFERENCES:**

 "Advanced Microwave Sounding Unit (AMSU-A) Phase Lock Oscillator Qualification/Acceptance Vibration Testing Procedure", Rev. 3, OC-426, March 1998.

- 2. "PLO Assembly", Dwg. 1348360.
- 3. "Receiver Assembly A1-1", Dwg. 1356429.
  - 4. "Shelf Assy, RF, Lower", Dwg. 1331555.
  - 5. "AMSU-A Phase Lock Oscillator (PLO) Acceptance Vibration Testing of P/N 1348360-1, S/N F02", IOM 170:8611:#1291, 9 Dec. 1997.
  - 6. "Advanced Microwave Sounding Unit (AMSU-A) Phase Lock Oscillator, P/N 1348360-1, S/N F03, Mfg. S/O 431615.
  - 7. "Environmental Requirements AMSU-A Instrument Components", AE-26578B, 16 March 1995.
  - 8. "Advanced Microwave Sounding Unit (AMSU-A) Phase Lock Oscillator, P/N 1348360-1, S/N F04, Mfg. S/O 431618.

### **PURPOSE**

The purpose of this memo is to present a summary of the acceptance level vibration testing performed on the AMSU-A P/N 1348360-1 S/N's F03 and F04 PLO's on April 7, 1998.

### SUMMARY

The AMSU-A P/N 1348360-1 S/N's F03 and F04 PLOs were successfully tested to acceptance level component random vibration loads per the Ref. 1 procedure. Test level was at 13.6 Grms. Before and after each axis of random vibration, low level sine sweeps were run to verify structural integrity of the component assembly. In addition, an electrical functional test

was performed, successfully, after each random vibration test axis. Maximum response of the single triaxial response accelerometer mounted on the PLL/TCXO Assembly occurred for (1) S/N F03 at the METSAT Y-Axis test, with Y-Axis response of 47.303 Grms, and (2) . Maximum peak  $3\sigma$  load, for the METSAT Y-Axis test at  $1^{st}$  f_n of approximately 1026 Hz is estimated at 56.9 g.

### RESULTS

The Ref. 2 S/N F03 instrument was mounted per Ref. 1, Figure 5, "Test Fixture Axis Orientation". Using METSAT orientation, the X-Axis was tested first, with a 0.25 g 20-2000 Hz pre-random sine sweep, the 13.6 Grms random, and a 0.25 g 20-2000 Hz post-random sine sweep all run, followed by an electrical functional test. Subsequently, Z-Axis and Y-Axis test sequences were also run. The same sequence of tests was run for Ref. 2 S/N f04. In all instances the pre-random and post-random sine sweeps showed no changes in the frequency responses before and after the random tests. Of greater significance, each electrical function test, run after each test axis vibration sequence, was successful.

Table 1 summarizes the responses recorded per the control accelerometer and the triaxial response accelerometer for S/N F03. Listed are total Grms responses along with an estimate of the peak 3 $\sigma$  response at 1st resonance, determined per half-power point method. Table 2 summarizes the same information for S/N F04.

The results of Table 1 compare to the Ref. 5, Table 1 values. However, there are some differences, which are probably due to (1) different units, and (2) different locations of the response accelerometers (see Ref. 1 and 5). For S/N F01, the response accelerometer was mounted on the +Sun side of the upper PLO assembly (on the PLL assembly). For S/N F02, the response accelerometer was moved to the +Velocity side of the upper PLO (PLL) assembly. The difference in stiffness of the mounts may have contributed to the response differences.

Note that this test continued using #6 mounting screws attaching the unit to the fixture adapter plate (see Ref. 5 discussion).

Table 1 Analysis of S/N F03 Random Vibration Data

X-Axis Test						
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control	13.590					
X-Response	18.456	864	903	0.51	4.46	13.4
Y-Response	10.292	886	931	1.0	6.71	20.1
Z-Response	9.652	886	920	0.21	2.67	8.0

Z-Axis Test						
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control	13.533					
X-Response	13.898	1055	1079	1.75	6.48	19.4
Y-Response	7.147	1056	1088	0.72	4.8	14.4
Z-Response	30.320	1035	1068	2.1	8.32	25.0

Y-Axis Test						
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control	13.521					:
X-Response	21.303	1027	1054	4.0	10.39	31.2
Y-Response	44.408	1022	1054	6.0	13.86	41.6
Z-Response	10.896	1022	1054	0.49	3.96	11.9

Table 2 Analysis of S/N F04 Random Vibration Data

X-Axis Test						
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control	13.513					
X-Response	21.552	875	894	0.60	3.38	10.1
Y-Response	11.190	881	914	2.0	8.12	24.4
Z-Response	16.889	891	914	0.11	1.59	4.8

						~ 1
Z-Axis Test Accel. No.	Total	1st fn	1st fn	1st Peak	1st Total	Estimated
	Response	f(low)	f(high)	Resonance	Resonance	Peak g's
	Grms	Hz	Hz	g2/Hz	Grms	During Test
Control X-Response Y-Response Z-Response	13.552	1038	1064	1.7	6.65	19.9
	15.001	1041	1064	1.15	5.14	15.4
	7.591	1035	1068	2.05	8.22	24.7

Y-Axis Test Accel. No.	Total Response	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control X-Response Y-Response Z-Response	Grms 13.522 21.257 47.303 6.285	1003 1011 1041	1041 1041 1101	5.2 12 0.13	14.06 18.97 2.79	42.2 56.9 8.4

Figures 1-3 are S/N F03 plots of the in-axis responses for random vibration for the PLO for each of the three test axes. A complete set of vibration data, including all sine sweep data, is included with the Ref. 6 shop order. Figures 4-6 are S/N F04 plots of the in-axis responses for random vibration for the PLO for each of the three test axes. A complete set of vibration data, including all sine sweep data, is included with the Ref. 8 shop order.

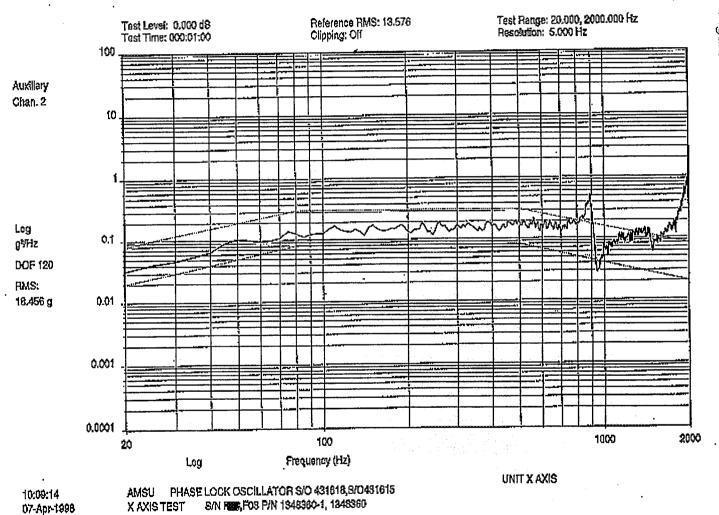
## **CONCLUSIONS and RECOMMENDATIONS**

It is concluded that the S/N F03 and S/N F04 P/N 1348360-1 PLO's successfully passed the Ref. 7 AMSU-A Instrument Component Random Vibration Tests.

R. J. Heffner

Mechanical Design and Analysis

FILES: PC My Documents/amsua2/plovibtest3#274.doc

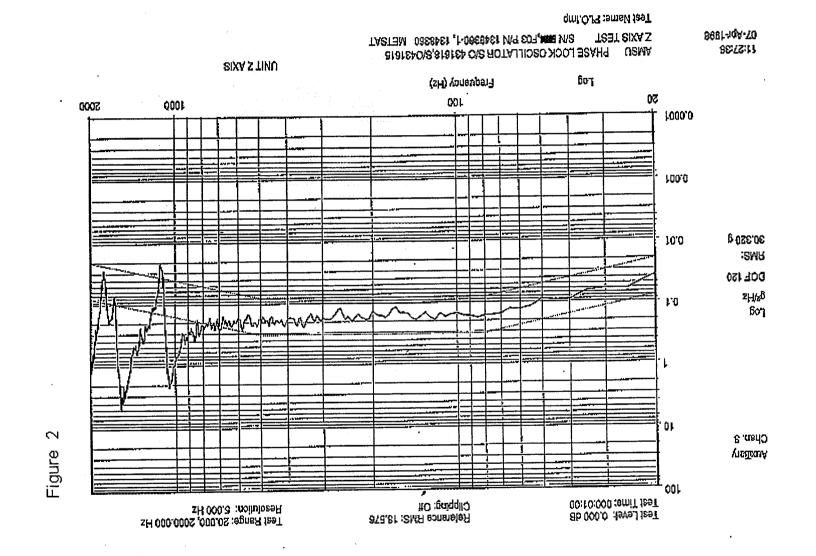


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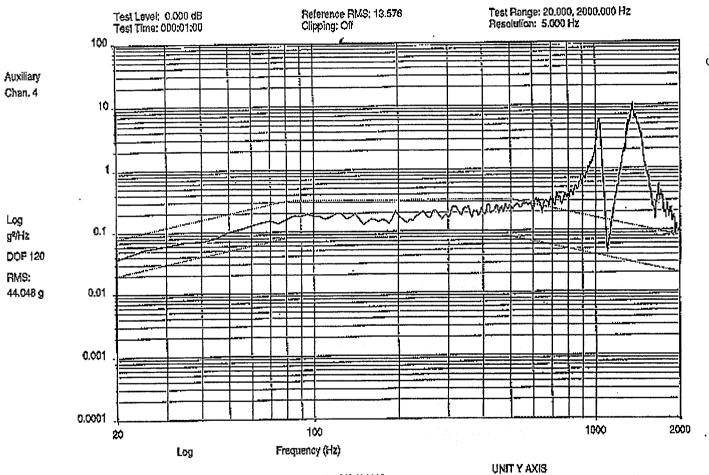
07-Apr-1998

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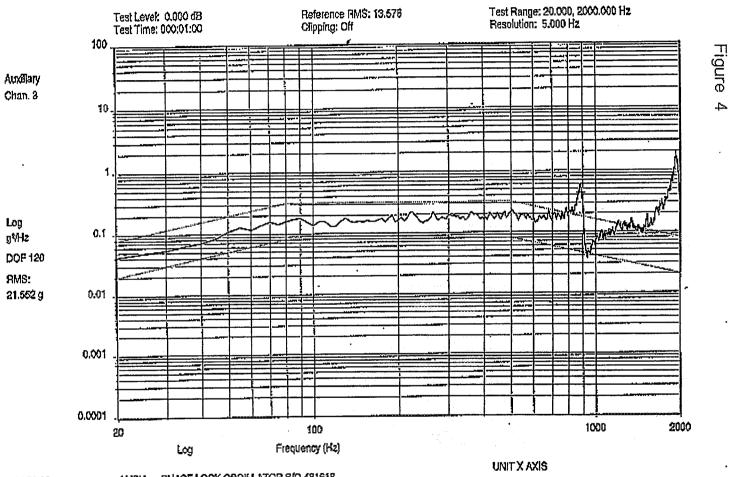






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Y AXIS TEST S/N (1984),F03 P/N 1348360-1, 1348360 METSAT

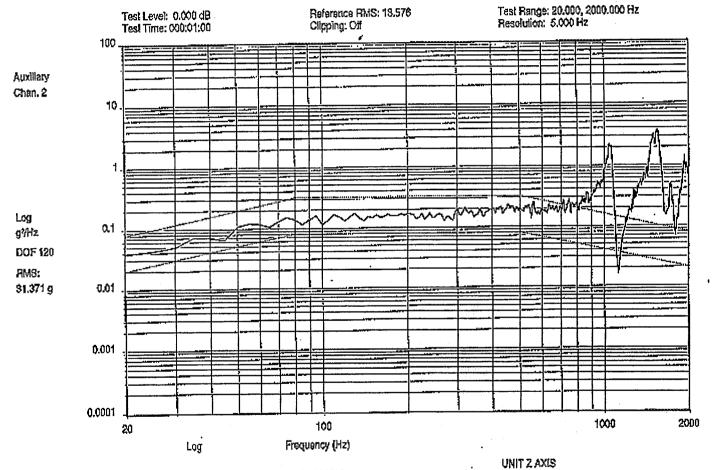
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14:51:02 07-Apr-1998 AMBU PHASE LOCK OSCILLATOR 9/O 491618 X AXIS TEST SIN FO4, PIN 1948960-1 METSAT

Test Name: PLO.imp

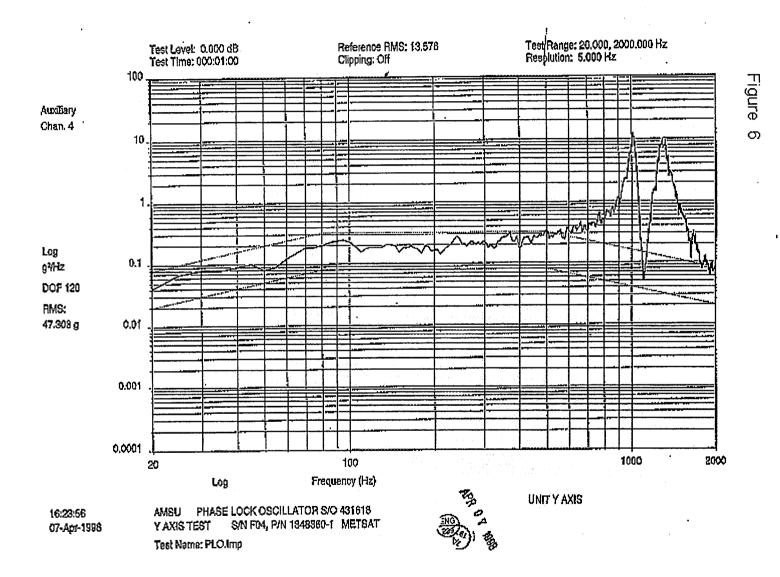




15:44:15 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR S/O 481618 Z AXIS TEST S/N F04, P/N 1348360-1 METSAT

Test Name: PLO.imp





#OC-426, Rev **B** ENG 229 Y/7/98

## AMSU-A EOS/METSAT PLO QUALIFICATION/ACCEPTANCE RANDOM VIBRATION TEST DATA SHEET 1 (DS1) TEST EQUIPMENT LOG

ITEM	Manufacturer	Model/	Aerojet	Calibration	Calibration	
		Part No.	Inventory No	Date	Due Date	
Gen Rad Vib Control	SUN	2550	55053	2/3/98	8/3/98	
Shaker Amplifier	UNHOLTZ	SRP3A	54718-1	2/12/98	1, 7, 7, 6	
Tape Recorder	Metrum	RSR512		5/19/97	5/101	
Charge Amplifier	Endeved	2775A	7434339	11/15757	1.1/0	
Charge Amplifier	11	11	7434340		11/15/98	
Charge Amplifier	11	11	7434347	<del></del>	10/25/98	
Charge Amplifier	11	11	7434348	1/29/97	4/29/98	
Charge Amplifier	11	11	743 4342	1/27/97	7/27/98	
Charge Amplifier	11	j /	7434343	1128197	10/28/98	
Accelerometer	Enderco	227/Am2L		5/1/97	5/1/98	
Accelerometer	11	11	L606 043	5/1/97	5/1/98	
Accelerometer	lı .	//	1606 645	6/25/97	6/25/98	
elerometer	i į	35	L607073	10/2/97	1/2/99	
celerometer	Il		1606042	5/1/97	5/1/98	
Accelerometer	11	9694M1	L606872	5/7/97	<u> </u>	
Vib Monitor Limiter	UNhOLTZ	AM123	54742	1117	7 78	
Vib Monitor Limiter	UNHOLTZ	11	54742	1/13/98	1/13/99	
Fixture	LING	25742	A+1358494	1/13/98 Win	11110	
Fixture	Ling	45269	A++1358994	MA	NIFT	
Forque Strend	manon	6006A	L 567948	4	C/10/00	
V		\$ 500 II	100//40	2/20/98	8/20/99	

10.10	Signature/Date
Assembly Part No. 1348360	Engineer: 1/2/53
Serial No. <u>Fo 4</u>	Quality Control: APR 0 7 1998 (261)
Shop Order 4316-18 ENG	Operator: Lillma 4/7/98
431615 4/1/98	

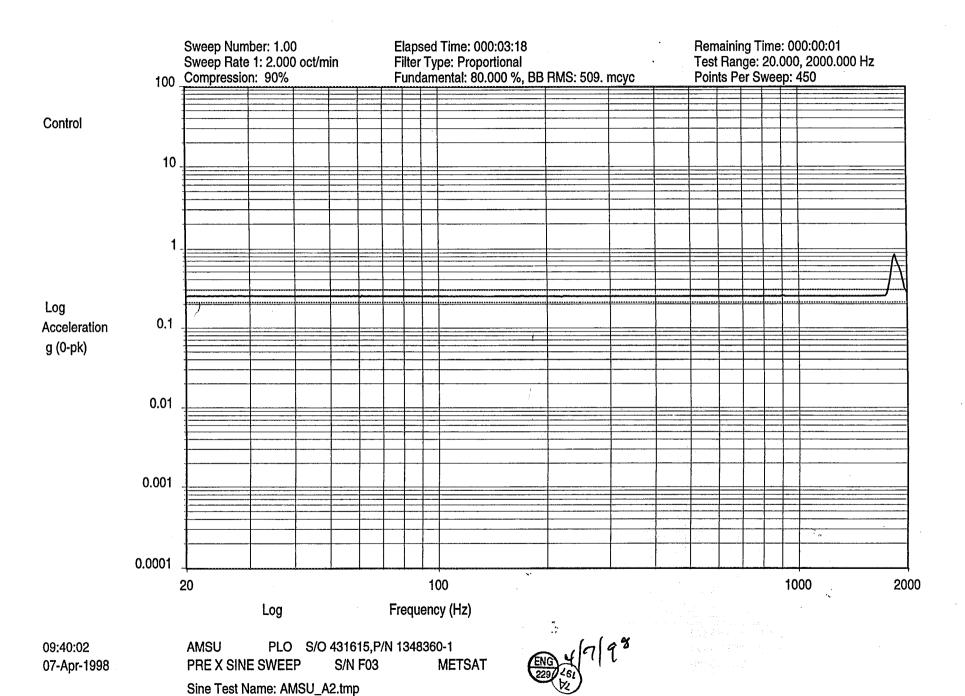
#OC-426, Rev.**3** 

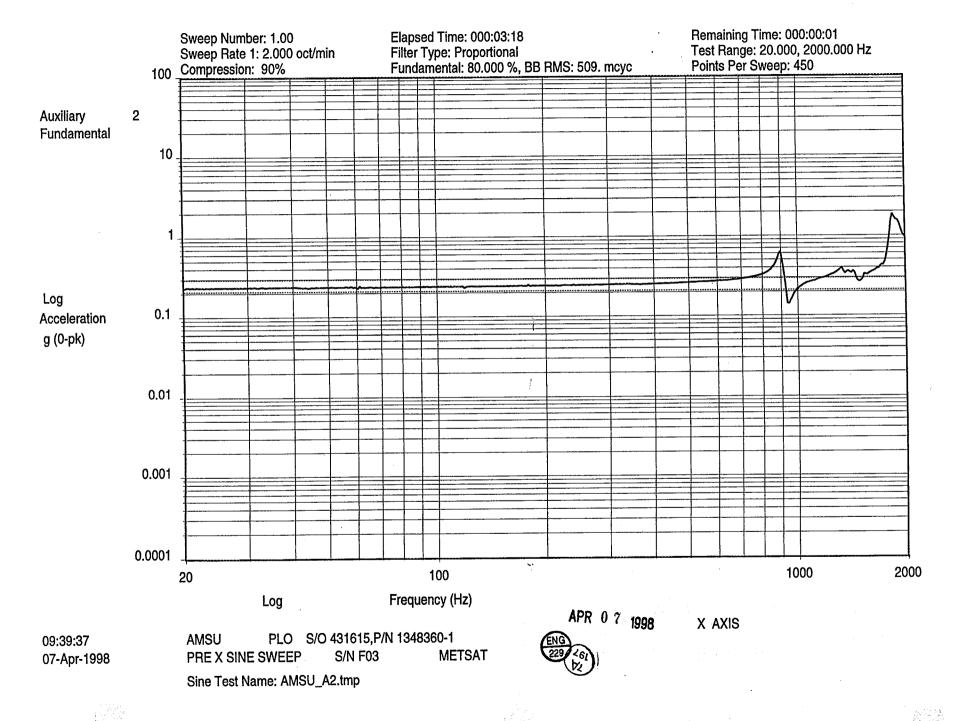
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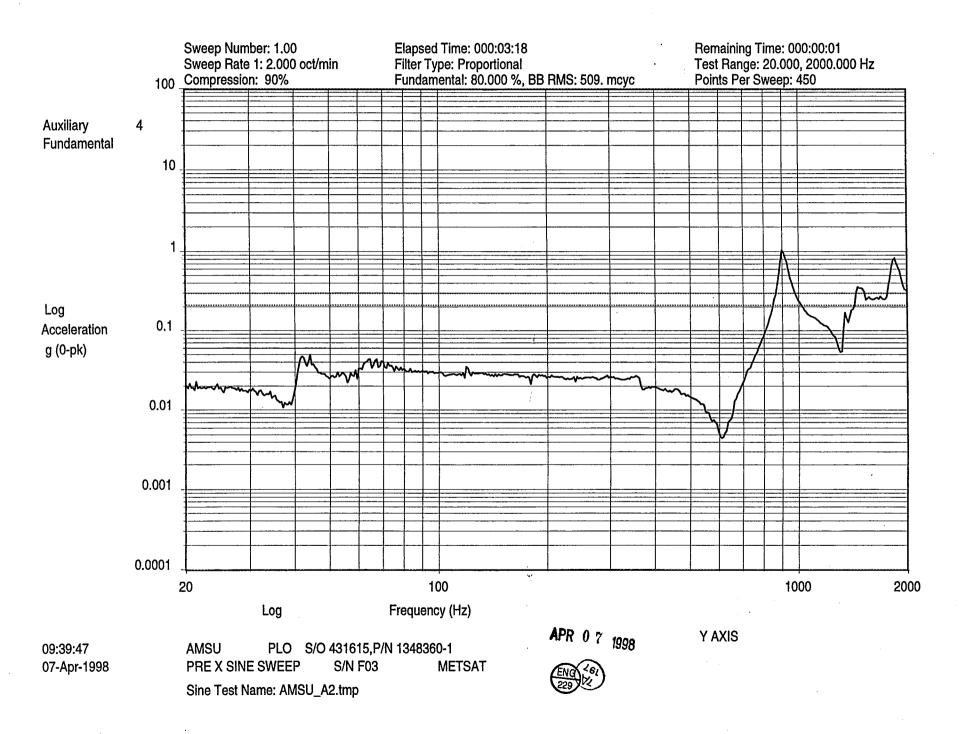
## TEST DATA SHEET (DS2) ACCELEROMETER AXIS VS. DATA CHANNEL LOG

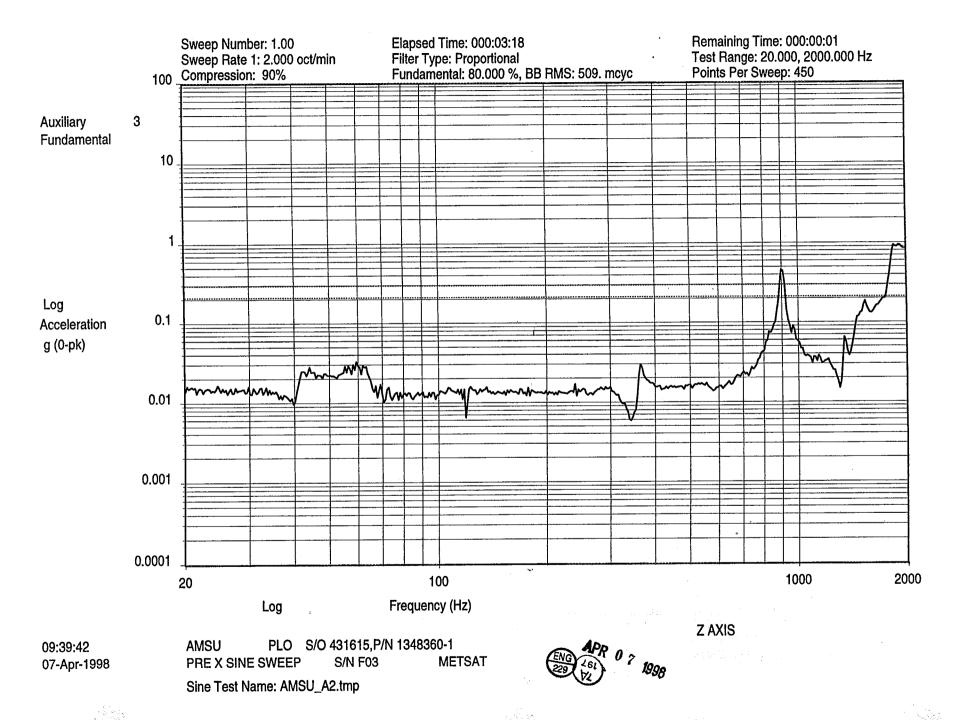
SHOP ORDER NUMBER 431615

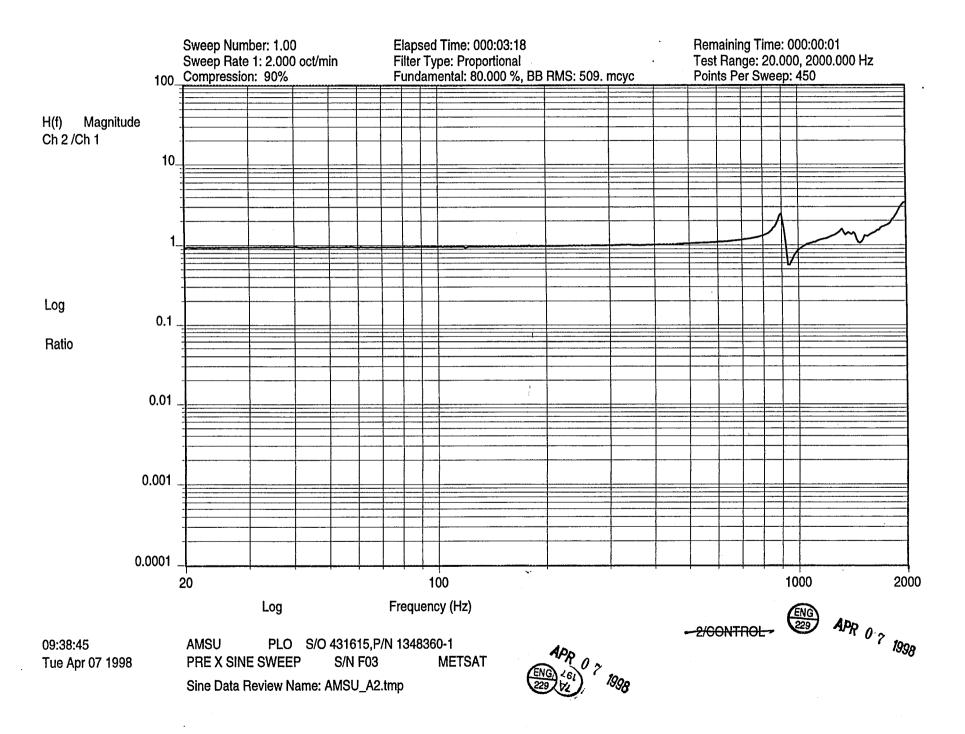
Accelerometer P/N and S/N	<b>Data Channel</b>	<u>Unit Axis</u>
1606041		Control
1606872	2	X 1
· //	3	Z
//	4	7

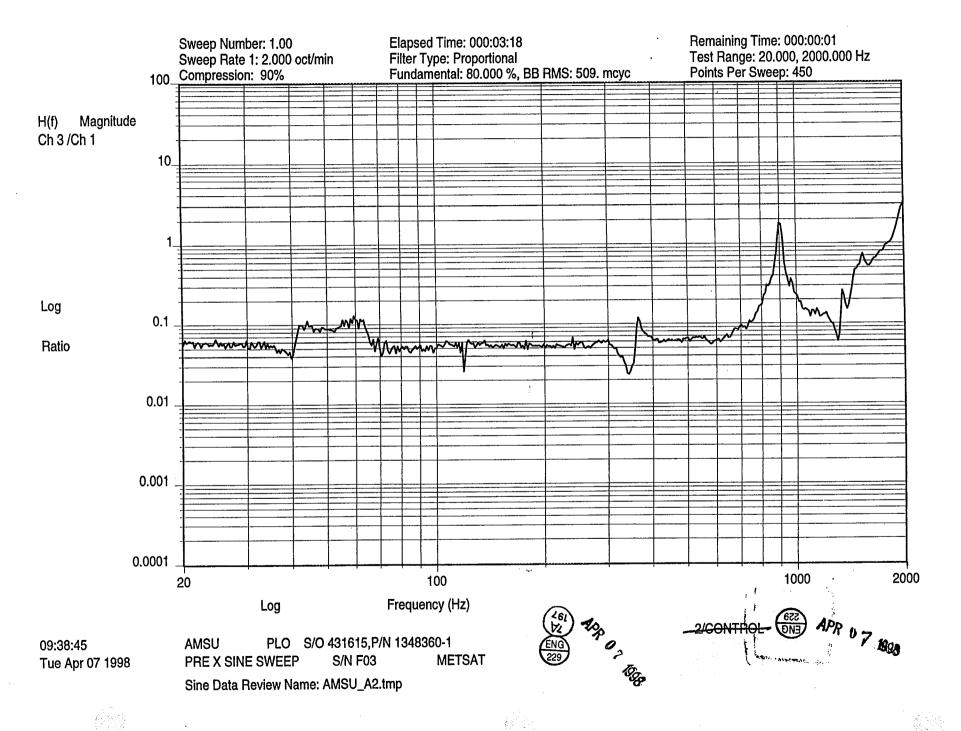


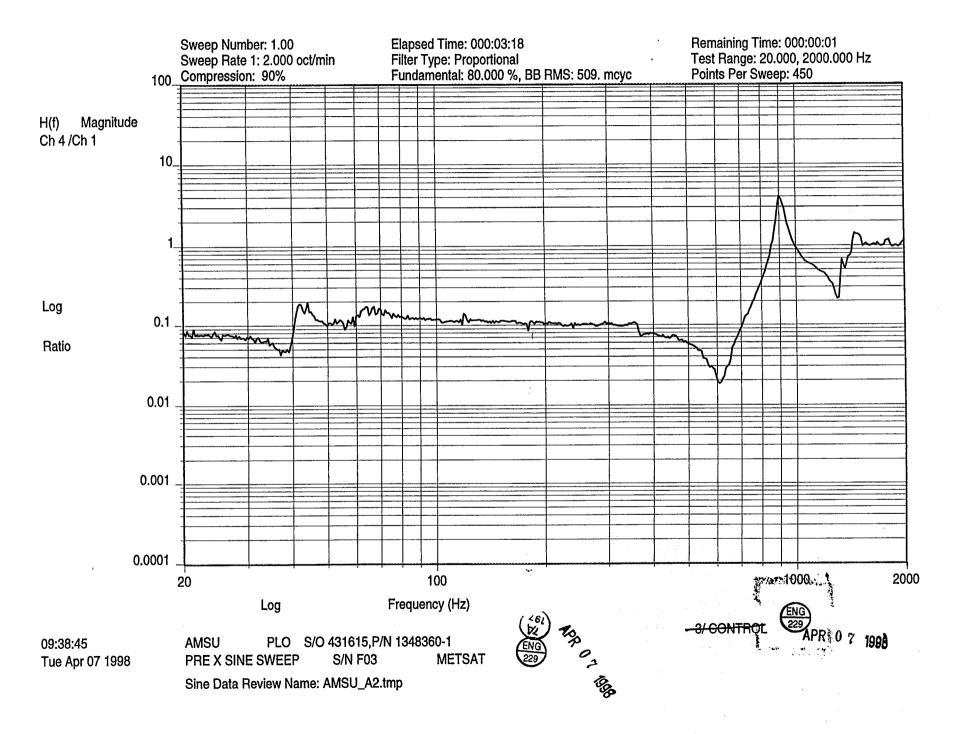












```
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                                 Tue Apr 07 1998 09:25:09
Current Date:
CONTROL PARAMETERS:
    DURATION -
                                      Sweeps
        Type:
                                        1.00
        Sweeps:
                                     000:03:19
        Test Time (hhh:mm:ss):
    CONTROL STRATEGY -
                                     Average
        Control Spectrum:
                                     Proportional
        Filter Type:
                                                    80.00 %, RMS 509. mcyc
                                     Fundamental
        Filter Specification:
    EQUALIZATION -
                                         0.00 dB
        Test Level:
    OPERATION MODE - .
                                     Enable
        Manual Operation:
    STARTUP/SHUTDOWN -
                                        10.00 dB/sec
        Startup Rate:
                                        20.00 dB/sec
        Shutdown Rate:
                                         0.10 dB
        Level Increment:
    COMPRESSION PARAMETERS -
                                     Enable
        Manual Override:
                                     Disable
        Record Manual Changes:
    SWEEP PARAMETERS -
                                         No
        Manual Sweep Start:
                                        Log
        Sweep Mode:
                                      100%50%25%
        Sweep Rate Definition:
                                        2.0000 Oct/min
        Sweep Rate 1:
                                        1.0000 Oct/min
        Sweep Rate 2:
                                        0.5000 Oct/min
        Sweep Rate 3:
        Sweep Duration (hhh:mm:ss): 000:03:19
                                      Enable
        Manual Override:
                                      Disable
        Record Manual Changes:
    SWEEP/COMPRESSION TABLE -
                                        Compression
                                Rate
                Frequency
     Segment
                                          (%)
                              (Oct/min)
                  (Hz)
     Number
                                           90
                  2000
                                 2
        1
REFERENCE TABLE:
      Units for Acceleration, Velocity and Displacement: g, in/s, in
                                        Value -Alarm +Alarm -Abort
                                                                           +Abort
                          Type
    Segment Frequency
                                                                            (dB)
                                                         (dB)
                                                                   (dB)
                                       (Units)
                                                 (dB)
    Number
              (Hz)
                                                                             20
                                                          1.5
                                                                   -20
                                        0.25
                                                 -1.5
                        Acceleration
            2000
       1
    REFERENCE PARAMETERS -
                                        20.000 Hz
        Minimum Frequency:
                                      2000.000 Hz
        Maximum Frequency:
                                       20.000 Hz
        Transducer Crossover:
                                        10.000 %
        Crossover Range:
                                       450.000
        Frequency Points:
                                      Disable
        Box Tolerance:
    IMPORT REFERENCE -
                                        Off
        Import:
    SPECTRUM DYNAMIC LIMITS -
                                         0.000 dB
        Acceleration Range:
                                         0.250 g
        Minimum Acceleration (0-pk):
        Maximum Acceleration (0-pk):
                                         0.250 g
                                         0.768 in/s
        Maximum Velocity (0-pk):
                                         0.012 in
        Maximum Displacement (pk-pk):
SAFETY PARAMETERS:
    ALARM/ABORTS -
        Active Frequency Range -
```

20.00 Hz

2000.00 Hz

Minimum Frequency:

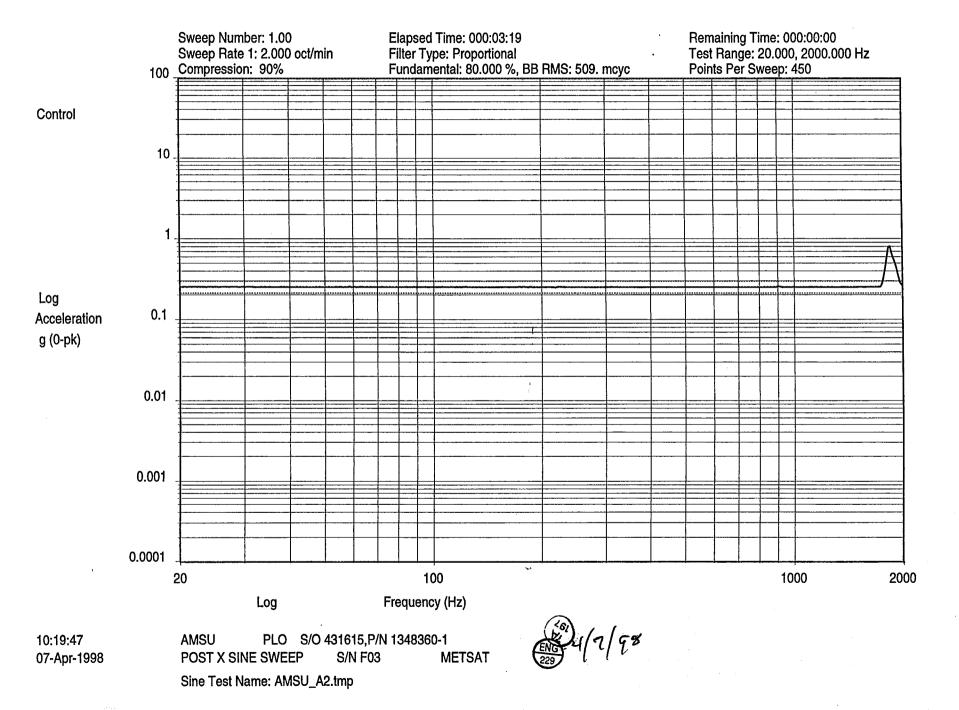
Maximum Frequency:

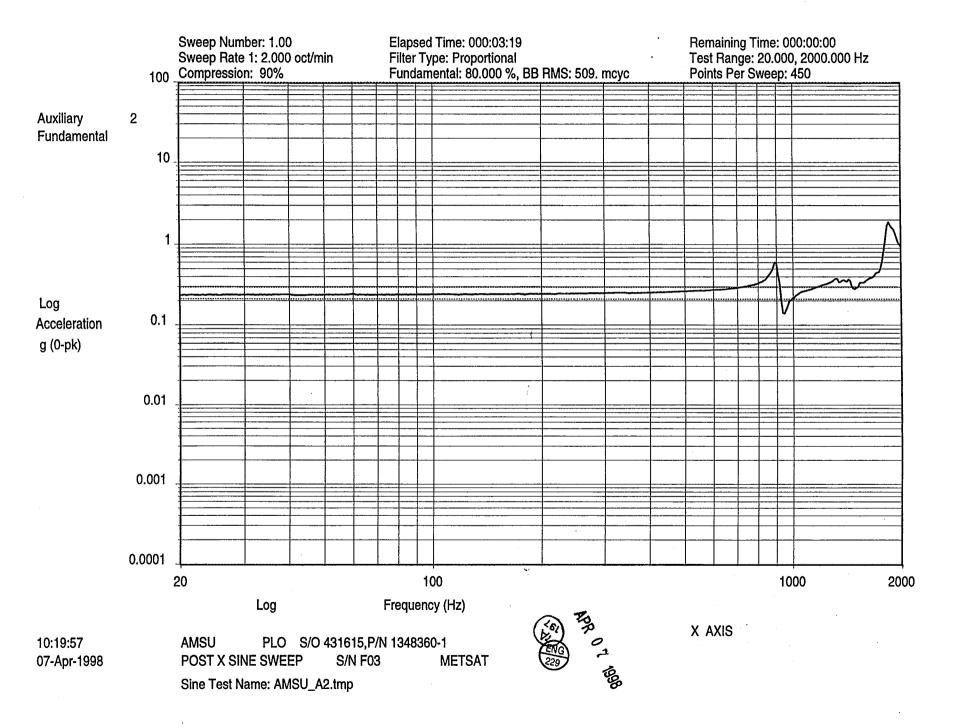
20.00 dB Reference CSL Threshold: 5 CSL Count Threshold: LOOP CHECK -30.00 mV RMS Noise Threshold: 100.00 Hz Frequency: 100.00 mV RMS Maximum Drive: Pause after Loop Check: No DRIVE SIGNAL -10.00 Vpeak Maximum Drive: 0.00 Seconds Attenuated Output Delay: CHANNEL TABLE: Loop Sensitivity Input Transducer Control Profile Measurement Channel Channel Check (mV/Units) Coupling Type Units Weighting Number Process Number Type 100.00 Nulled DC Acceler g Control 0.00 Fundamental 1 Yes 10.00 Nulled DC Acceler g Fundamental 2 Auxiliary No 10.00 Nulled DC Acceler g 10.00 Nulled DC Acceler g Fundamental 3 Auxiliary No Fundamental 4 No Auxiliary (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation Check (mV/Units) Label 1 Label 2 Number Type 100.00 CONTROL 1 . Control Yes Auxiliary 10.00 X AXIS 2 No 10.00 Z AXIS 3 Auxiliary No 10.00 Y AXIS Auxiliary No (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: No Enable H(f) Measurement: H(f) Response Reference Label Pair Channel Channel 2/CONTROL 1 2 1 2/CONTROL 2 3 1 3/ CONTROL 3 1 4 4/ CONTROL 1 4 5 DOCUMENTATION: Display Text -PLO S/O 431615, P/N 1348360-1 Title 1: AMSU Title 2: PRE X SINE SWEEP S/N F03 List Only Text -Title 3: Prompt before Test: Yes Data Storage -Off Storage Mode: Message Log -Off Log Mode: Printing -Off Automatic Plot: REMOTE COMMUNICATION TABLE: Enable Remote Communication: No SHAKER LIMITS: Enable Shaker Limits: No

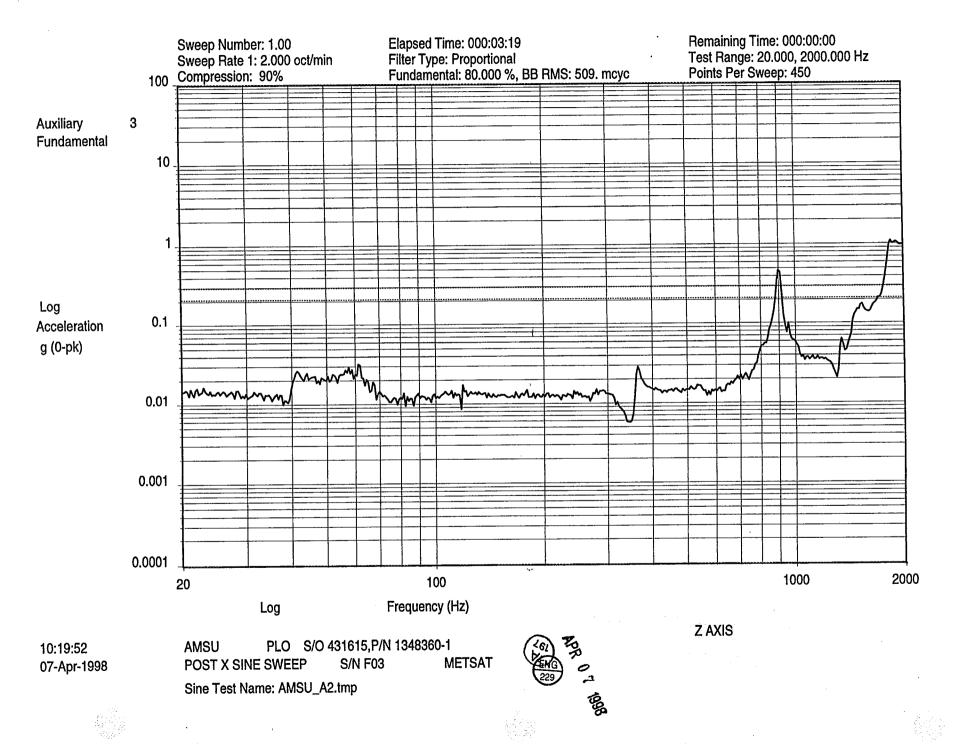
Yes

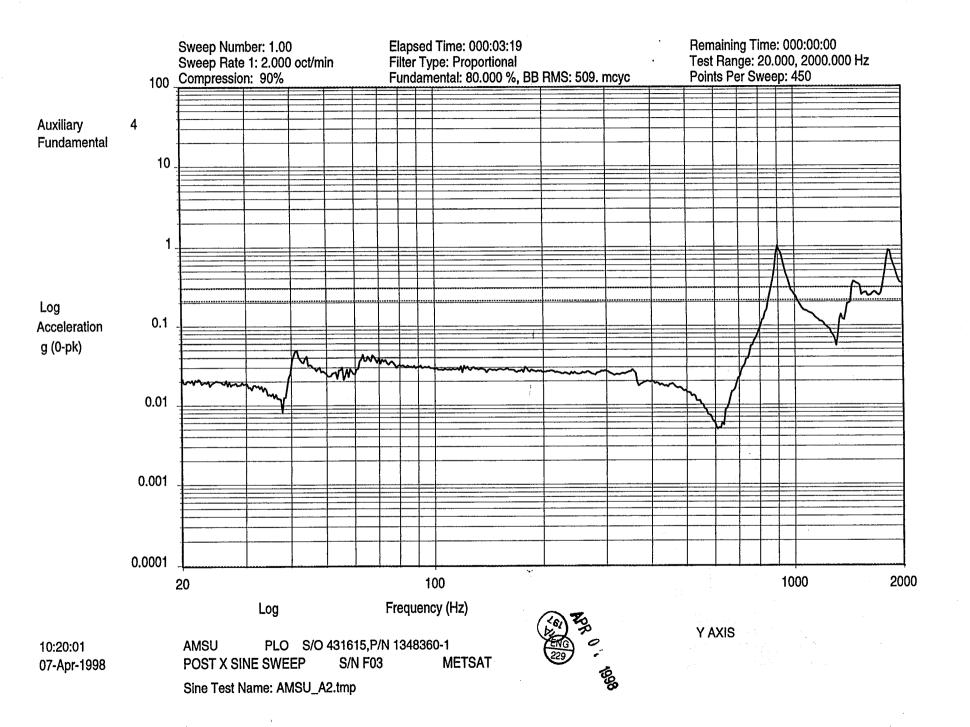
Enable for Manual Mode:

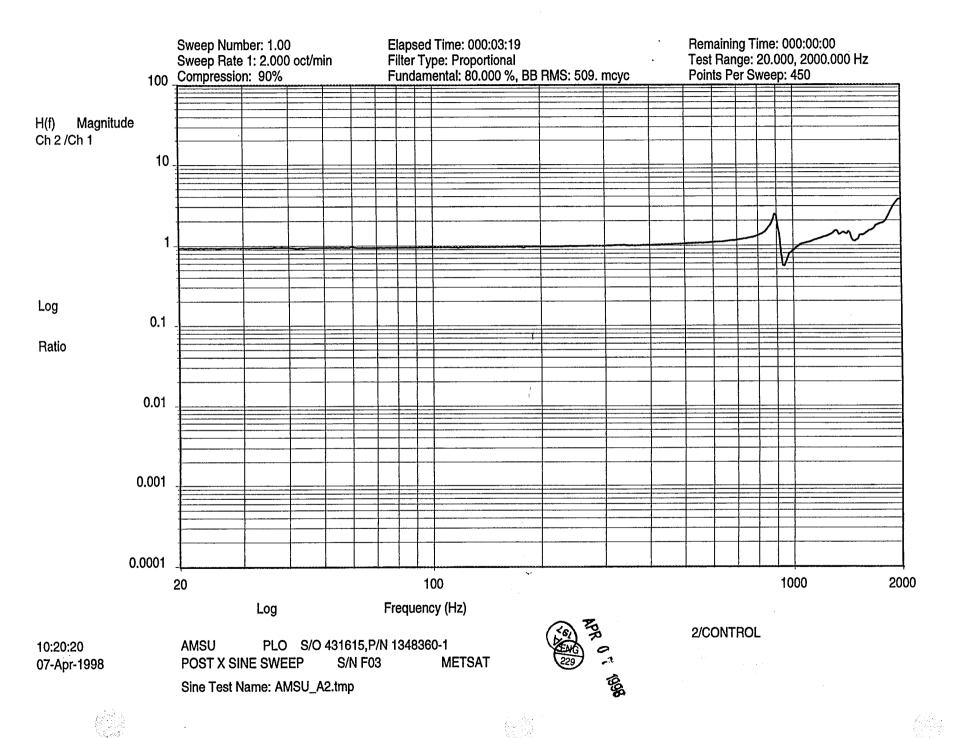
End of Sine Test List

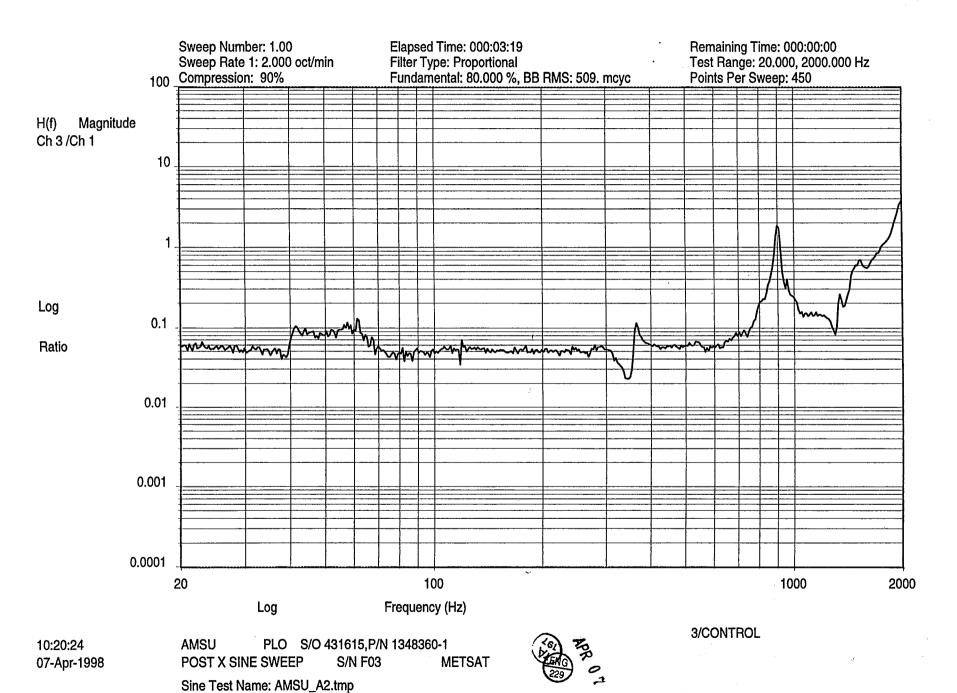


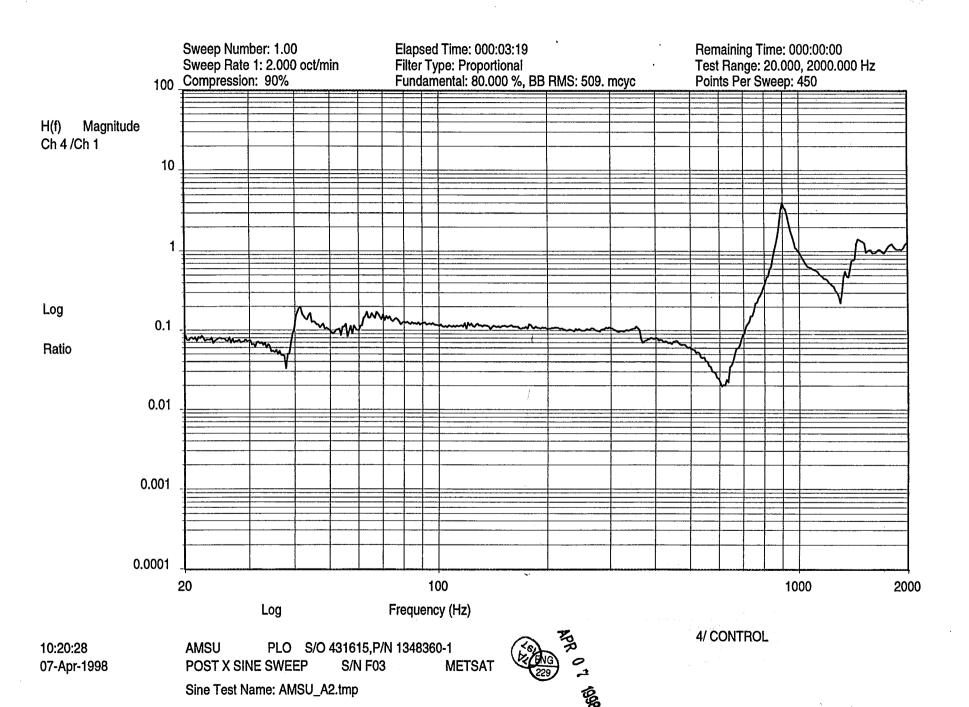












```
Sine Version 4.6.0 Test File Listing
```

```
AMSU_A2
File Name:
                                 Tue Apr 07 1998 10:13:22
Current Date:
CONTROL PARAMETERS:
   DURATION -
                                     Sweeps
        Type:
                                       1.00
        Sweeps:
                                     000:03:19
        Test Time (hhh:mm:ss):
   CONTROL STRATEGY -
                                    Average
       Control Spectrum:
                                    Proportional
        Filter Type:
                                                  80.00 %, RMS 509. mcyc
                                    Fundamental
        Filter Specification:
   EQUALIZATION -
                                       0.00 dB
        Test Level:
   OPERATION MODE -
                                    Enable
       Manual Operation:
    STARTUP/SHUTDOWN -
                                      10.00 dB/sec
        Startup Rate:
                                      20.00 dB/sec
        Shutdown Rate:
                                       0.10 dB
        Level Increment:
   COMPRESSION PARAMETERS -
                                    Enable
        Manual Override:
                                   Disable
        Record Manual Changes:
    SWEEP PARAMETERS -
        Manual Sweep Start:
                                       No
                                      Log
        Sweep Mode:
        Sweep Rate Definition:
                                   100%50%25%
                                      2.0000 Oct/min
        Sweep Rate 1:
        Sweep Rate 2:
                                      1.0000 Oct/min
                                      0.5000 Oct/min
        Sweep Rate 3:
        Sweep Duration (hhh:mm:ss): 000:03:19
        Manual Override:
                                    Enable
                                    Disable
        Record Manual Changes:
   SWEEP/COMPRESSION TABLE -
                                      Compression
    Segment
               Frequency
                              Rate
                             (Oct/min)
                                      (융)
    Number
                  (Hz)
                                         90
                  2000
                                2
REFERENCE TABLE:
     Units for Acceleration, Velocity and Displacement: g, in/s, in
                                      Value -Alarm +Alarm
                                                                -Abort +Abort
    Segment Frequency
                          Type
                                      (Units)
                                               (dB)
                                                        (dB)
                                                                  (dB)
                                                                          (dB)
   Number
             (Hz)
                                       0.25
                                                -1.5
                                                        1.5
                                                                 -20
                                                                           20
                      Acceleration
            2000
       1
   REFERENCE PARAMETERS -
                                      20.000 Hz
        Minimum Frequency:
       Maximum Frequency:
                                    2000.000 Hz
                                    20.000 Hz
        Transducer Crossover:
                                      10.000 %
        Crossover Range:
                                     450.000
        Frequency Points:
                                    Disable
        Box Tolerance:
    IMPORT REFERENCE -
                                      Off
        Import:
    SPECTRUM DYNAMIC LIMITS -
                                       0.000 dB
        Acceleration Range:
                                       0.250 g
        Minimum Acceleration (0-pk):
                                     0.250 g
        Maximum Acceleration (0-pk):
                                        0.768 in/s
        Maximum Velocity (0-pk):
                                       0.012 in
        Maximum Displacement (pk-pk):
 ÀFETY PARAMETERS:
   ALARM/ABORTS -
        Active Frequency Range -
                                       20.00 Hz
            Minimum Frequency:
```

2000.00 Hz

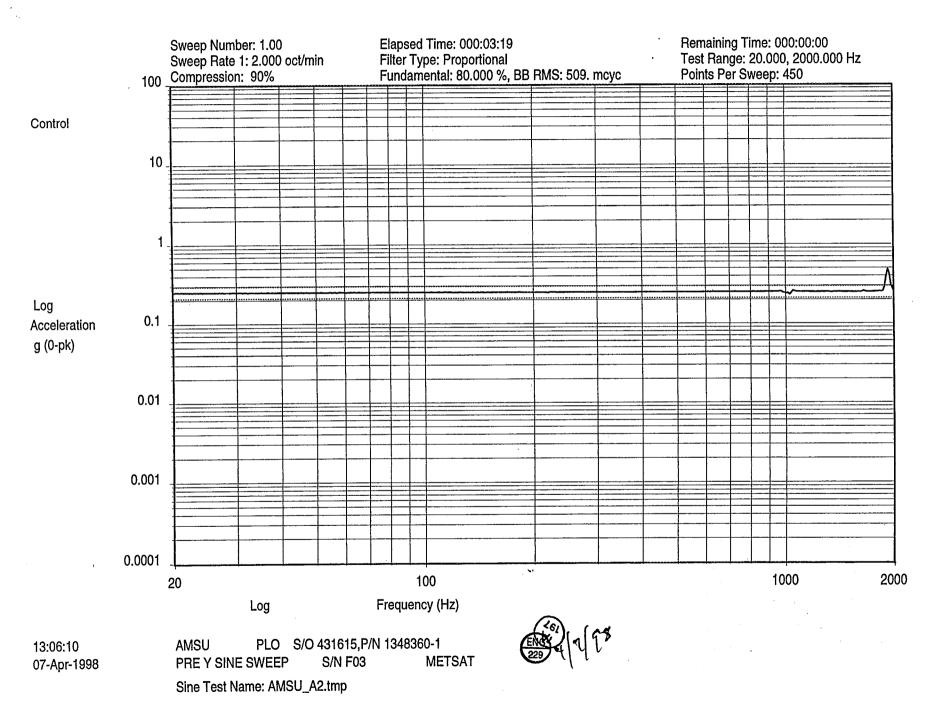
Maximum Frequency:

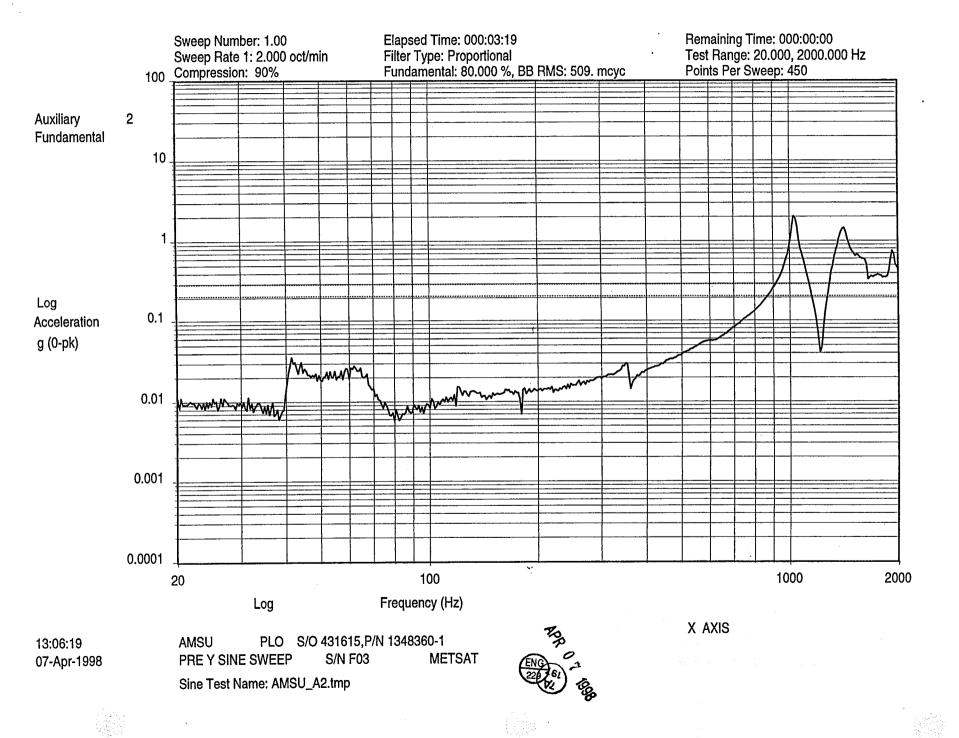
20.00 dB Reference CSL Threshold: 5 CSL Count Threshold: LOOP CHECK -30.00 mV RMS Noise Threshold: 100.00 Hz Frequency: 100.00 mV RMS Maximum Drive: No Pause after Loop Check: DRIVE SIGNAL -10.00 Vpeak Maximum Drive: 0.00 Seconds Attenuated Output Delay: CHANNEL TABLE: Transducer Loop Sensitivity Input Control Profile Measurement Channel Channel Check (mV/Units) Coupling Type Units Weighting Number Process Number Type 100.00 Nulled DC Acceler g 0.00 Fundamental Yes 1 Control 10.00 Nulled DC Acceler g 10.00 Nulled DC Acceler g Fundamental No 2 Auxiliary Fundamental No Auxiliary 10.00 Nulled DC Acceler g Fundamental No Auxiliary (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation Check (mV/Units) Label 1 Label 2 Number Type Yes 100.00 CONTROL Control 1. Auxiliary 10.00 X AXIS No 10.00 Z AXIS Auxiliary No 10.00 Y AXIS No Auxiliary (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Yes Enable H(f) Measurement: Response Reference Label H(f) Channel Channel Pair 2/CONTROL 2 1 1 1 3/CONTROL 3 1 4/ CONTROL 3 DOCUMENTATION: Display Text -S/O 431615,P/N 1348360-1 PLO Title 1: AMSU Title 2: POST X SINE SWEEP S/N F03 METSAT List Only Text -Title 3: Yes Prompt before Test: Data Storage -Off Storage Mode: Message Log -Off Log Mode: Printing -Off Automatic Plot: REMOTE COMMUNICATION TABLE: Enable Remote Communication: No SHAKER LIMITS: No Enable Shaker Limits:

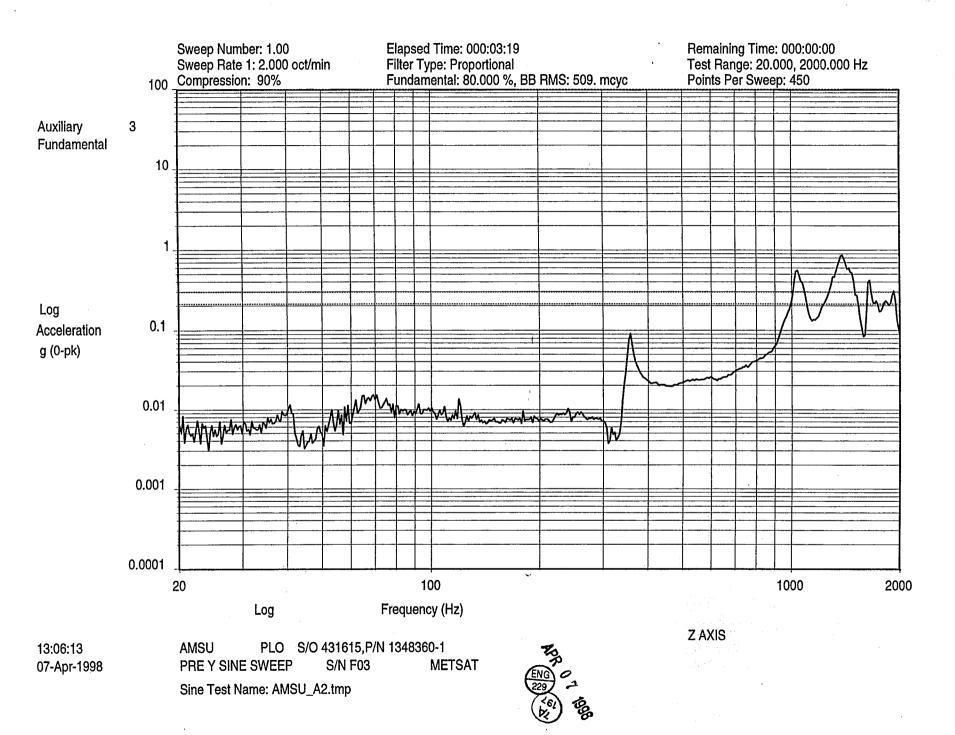
Yes

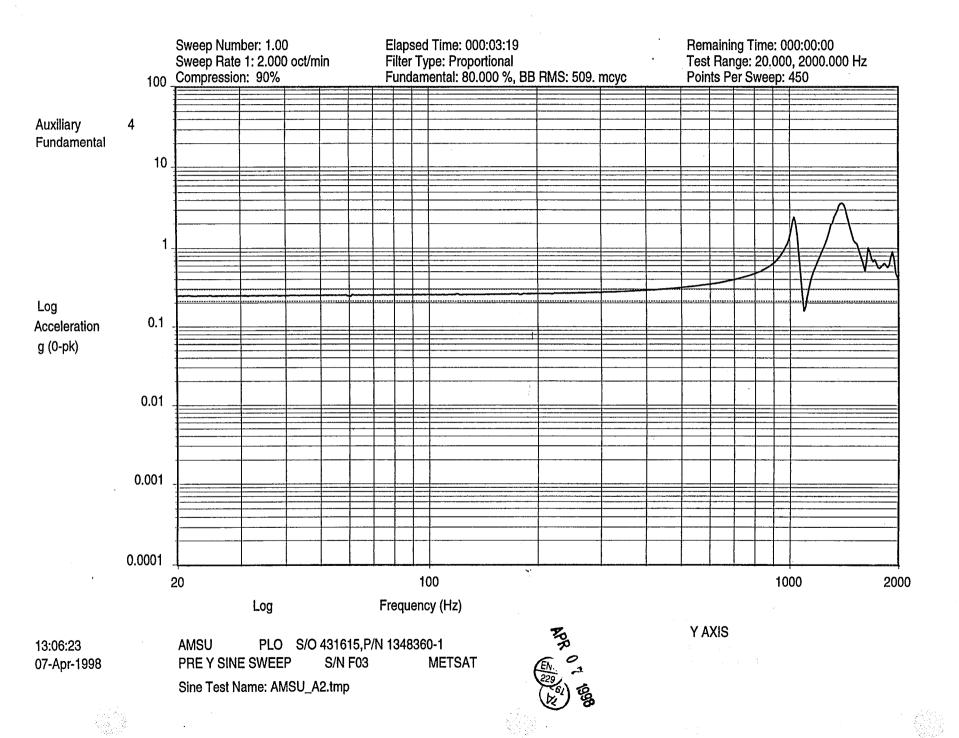
End of Sine Test List

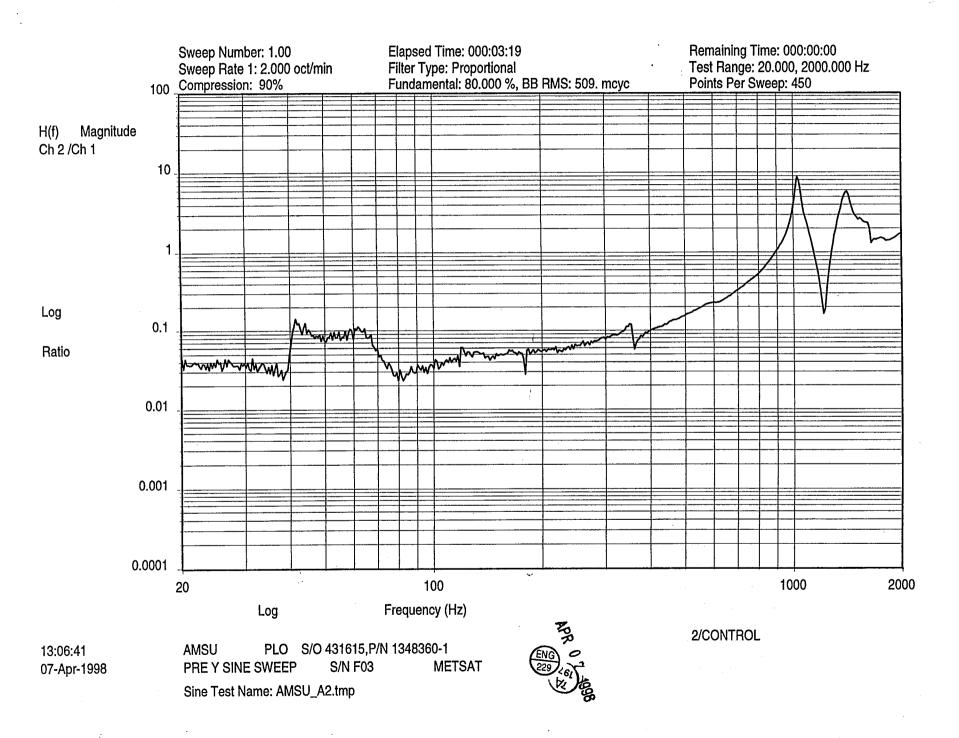
Enable for Manual Mode:

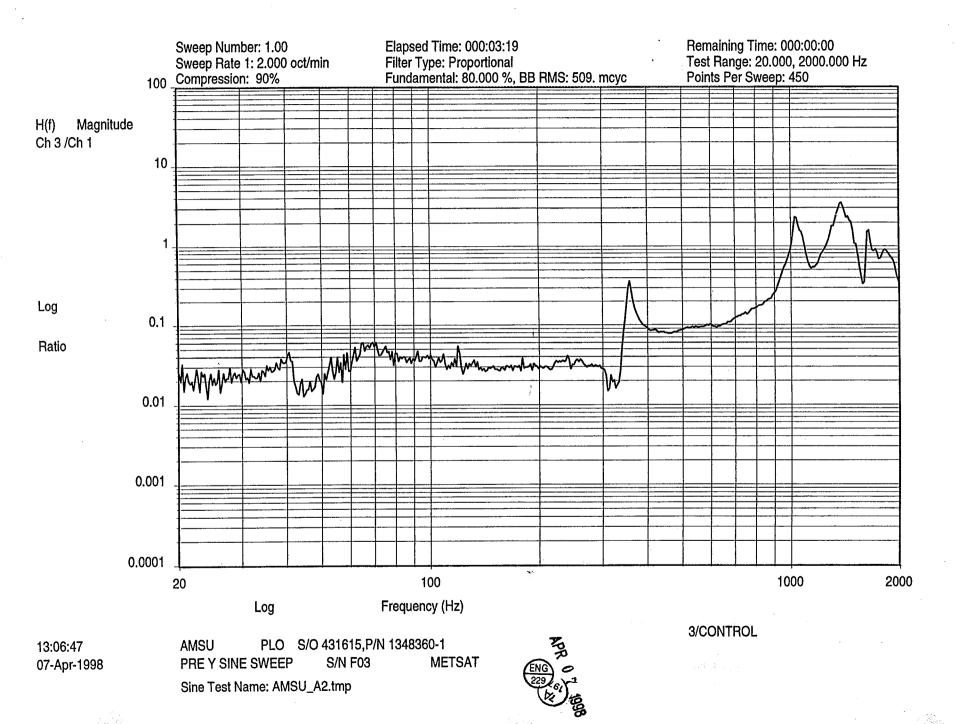


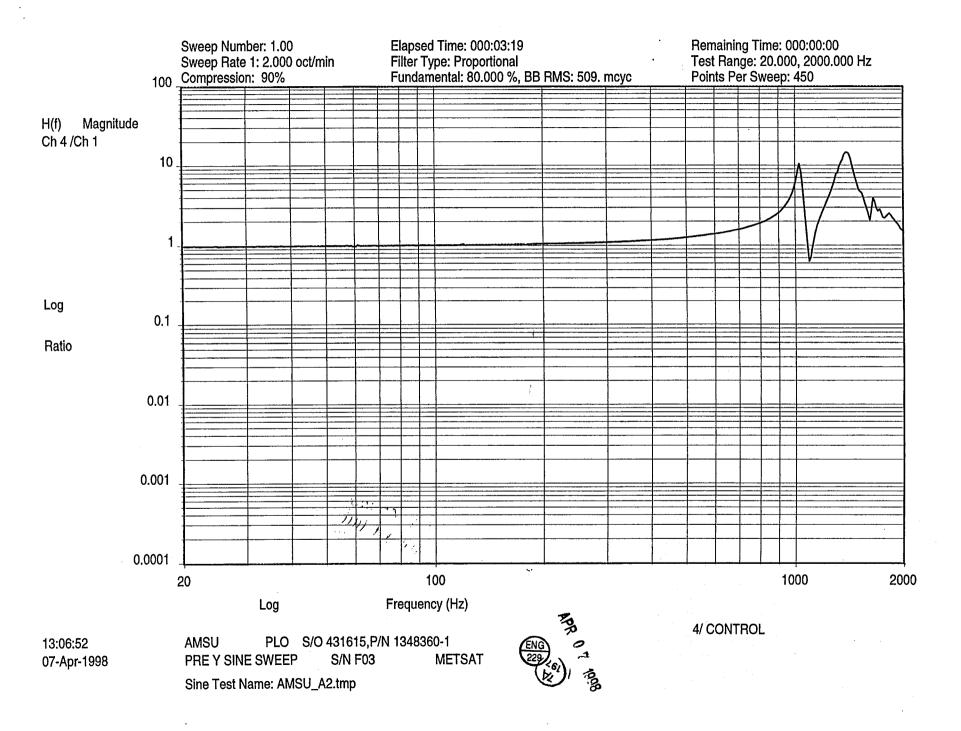












Active Frequency Range -

Minimum Frequency:

Maximum Frequency:

AMSU_A2 File Name: Tue Apr 07 1998 12:58:32 Current Date: CONTROL PARAMETERS: DURATION -Type: Sweeps Sweeps: 1.00 000:03:19 Test Time (hhh:mm:ss): CONTROL STRATEGY -Control Spectrum: Average Proportional Filter Type: 80.00 %, RMS 509. mcyc Filter Specification: Fundamental **EOUALIZATION -**Test Level: 0.00 dB OPERATION MODE -Enable Manual Operation: STARTUP/SHUTDOWN -Startup Rate: 10.00 dB/sec 20.00 dB/sec Shutdown Rate: Level Increment: 0.10 dB COMPRESSION PARAMETERS -Manual Override: Enable Record Manual Changes: Disable SWEEP PARAMETERS -No Manual Sweep Start: Log Sweep Mode: 100%50%25% Sweep Rate Definition: Sweep Rate 1: 2.0000 Oct/min 1.0000 Oct/min Sweep Rate 2: Sweep Rate 3: 0.5000 Oct/min Sweep Duration (hhh:mm:ss): 000:03:19 Enable Manual Override: Record Manual Changes: Disable SWEEP/COMPRESSION TABLE -Segment Frequency Rate Compression (Oct/min) (%) Number (Hz) 90 1 2000 2 REFERENCE TABLE: Units for Acceleration, Velocity and Displacement: g, in/s, in -Alarm +Alarm -Abort Value Segment Frequency Type (dB) (dB) (dB) (dB) (Units) Number (Hz) 1.5 -2020 -1.51 2000 Acceleration 0.25 REFERENCE PARAMETERS -20,000 Hz Minimum Frequency: 2000.000 Hz Maximum Frequency: 20.000 Hz Transducer Crossover: 10.000 % Crossover Range: Frequency Points: 450.000 Box Tolerance: Disable IMPORT REFERENCE -Off Import: SPECTRUM DYNAMIC LIMITS -0.000 dB Acceleration Range: Minimum Acceleration (0-pk): 0.250 g 0.250 g Maximum Acceleration (0-pk): Maximum Velocity (0-pk): 0.768 in/s Maximum Displacement (pk-pk): 0.012 in SAFETY PARAMETERS: ALARM/ABORTS -

20.00 Hz

2000.00 Hz

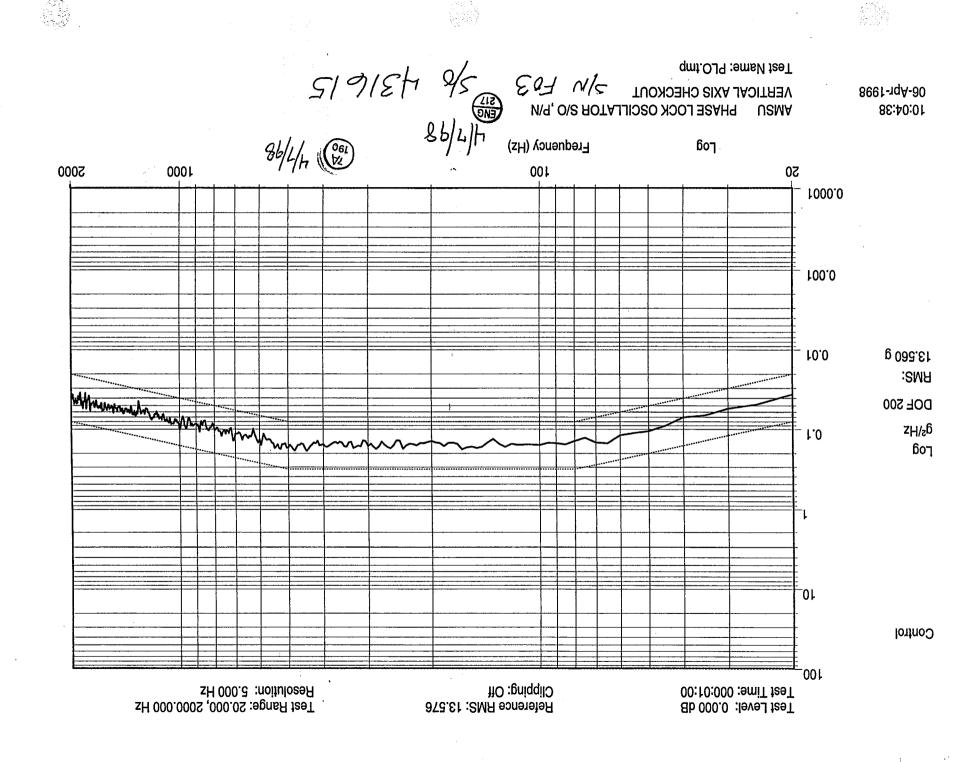
	Wererence C			20.00	uБ							
	CSL Count T	hreshol	ld:	5								
LOO	P CHECK -											
	Noise Thresh	hold:		30.00	WΜ	RMS						
-1000 -1000	Frequency:			100.00		1410						)
	Maximum Dri					DMC						' 1
			21	100.00	mv	RMS						
	Pause after	гоор (	Ineck:	No				·				
DRI	VE SIGNAL -											
•	Maximum Dri	ve:		10.00	Vpe	eak						
	Attenuated (	Output	Delav:	0.00								
			<b>-</b>									
CHANNEL	תא דוד די											
		<b>.</b>	a	<b>-</b> .				<b>a</b>	-			
			Sensitivity					Contro		Profile		
Number	Type	Check	(mV/Units)	Couplin	ıg	Туре	Units	Weight	ing	Number	Process	5
1	Control	Yes	100.00	Nulled	DC	Acceler	g	0.00			Fundame	ental
2	Auxiliary	No	10.00	Nulled	DC	Acceler	α				Fundame	ental
3		No	10.00			Acceler	-				Fundame	
4	Auxiliary	No										
_			10.00	Murred	DC	Acceler	g				Fundame	ental
	ued for Labe											
	Channel	Loop	Sensitivity	Channel	. Do	cumentat	cion					
Number	Type	Check	(mV/Units)	Label 1					Lab	el 2		
1		Yes	100.00									
	Auxiliary	No	10.00									
					•							
	Auxiliary	No	10.00									
4		No	10.00	Y AXIS	;							
(12 Ina	active Channe	els)										
TRANSFER	R FUNCTION PA	ATR TAF	8T.E.									
	ble H(f) Meas			37								
				Yes								
H(f)												
Pair		Chanr	nel									
1	2 .	1	2/CONTI	ROL								
2	3	1	3/CONT	ROL	_							)
3	4	. 1	4/ CONT									
ū	-	_	1, 001.	11.02								
DOGERATINE	TA CONT											
DOCUMENT												
Disp	play Text -											
	Title 1: AMS	รบ	PLO	) S/C	43	31615,P/N	v 13483	360-1				
	Title 2: PRI	E Y SIN	NE SWEEP	s/	N E	03		3	METS	AT		
List	t Only Text -	-		•								
	Title 3:											
		m	_	** -							•	
	Prompt befor	re Test	: <b>:</b>	Yes								
Data	a Storage -										. •	
	Storage Mode	∋:		Off								
Mess	sage Log -											
	Log Mode:			Off								
Desig	nting -			OII								
LI TI	_											
	Automatic Pl	Lot:		Off								
REMOTE (	COMMUNICATION	I TABLE	G:									
	ole Remote Co			No								
			· •	-1.0						-		
CILIA IZIDID. T	TMTMC											
SHAKER I												
Enal	ole Shaker Li	ımıts:		No								
End of S	Sine Test Lis	st										

Yes

20.00 dB

Enable for Manual Mode:

Reference CSL Threshold:



Pause after Loop Check:

```
File Name:
                                  Tue Apr 07 1998 09:00:57
Current Date:
 ONTROL PARAMETERS:
    DURATION -
                                      000:01:00
        Test Time (hhh:mm:ss):
    CONTROL STRATEGY -
                                        200
        Degrees of Freedom:
        Control Spectrum:
                                      Average
                                      Kaiser-Bessel
        Output Window:
    OPERATION MODE -
                                     Enable
        Manual Operation:
    EQUALIZATION -
                                     -18.0 dB
        Start Level:
        Initial Test Level:
                                        -18.0 dB
        Time at Initial Level:
                                        Off
        Prestored Drive:
                                        Off
    STARTUP/SHUTDOWN -
                                         20.0 dB/sec
        Startup Rate:
        Time to Full Level:
                                         60.0 sec
        Level Increment:
                                          2.0 dB
        Reset Measurement Average:
                                      Yes
        Shutdown Rate:
                                         20.0 dB/sec
REFERENCE TABLE:
            Frequency
    Break
                         Value
                                    Slope
                                             -Alarm
                                                      +Alarm
                                                                  -Abort
                                                                           +Abort
    Point
                                                        (dB)
              (Hz)
                         (g^2/Hz)
                                   (dB/oct)
                                             (dB)
                                                                  (dB)
                                                                             (dB)
       1
                                                        3
                                      3
                                              -3
                                                                   -6
                                                                             6
       2
                20
                         0.04
       3
                80
                         0.16
       4
               500
                         0.16
       5
              2000.
                         0.04
       6
                                      -3
    TEST BANDWIDTH -
        Minimum Frequency:
                                         20.00 Hz
        Maximum Frequency:
                                      2000.00 Hz
                                       400.00 Lines
        Frequency Lines:
        Frequency Resolution:
                                          5.00 Hz
    SPECTRUM DYNAMIC LIMITS -
                                         13.58 g RMS
        Overall RMS:
        Maximum Acceleration (0-pk):
                                         40.73 g
        Maximum Velocity (0-pk):
                                         12.86 in/s
        Maximum Displacement (0-pk):
                                         0.05 in
    IMPORT REFERENCE -
        Import:
                                        Off
SAFETY PARAMETERS:
   ALARM/ABORTS -
                                        21.9 g
       RMS Alarm:
       RMS Abort:
                                        31.0 g
       RMS Abort DOF:
                                          8
       Control Signal Loss:
                                     Standard
   Spectral Lines Allowed Out -
                                        60 Lines
       Alarm Lines:
       Abort Lines:
                                       100 Lines
   Active Conditions -
       Minimum Frequency:
                                        20.0 Hz
       Maximum Frequency:
                                      2000.0 Hz
       Level:
                                       -12.0 dB
       Enable for Manual Operation:
                                       Yes
   LOOP CHECK -
       Noise Threshold:
                                       100.0 mV RMS
       Maximum Drive:
                                       300.0 mV RMS
```

No

DRIVE SIGNAL -Drive Clipping: CHANNEL TABLE: Channel Channel

Loop Sensitivity Input Transducer Control Profile RMS A Type Check (mV/Units) Coupling Type Units Weighting Number (Unit)
Control Yes 10.00 Null DC Acceler g 0.00 Number Type 1 10.00 Null DC Acceler g No Auxiliary 2 10.00 Null DC Acceler g No Auxiliary 10.00 Null DC Acceler g No Auxiliary Channel Channel Loop Sensitivity Channel Documentation
Number Type Check (mV/Units) Label 1
1 Control Yes 10.00 CONTROL Label 2 Auxiliary No Auxiliary No Auxiliary No 10.00 UNIT X AXIS 2 10.00 UNIT Z AXIS 3 10.00 UNIT Y AXIS (12 Inactive Channels)

TRANSFER FUNCTION PAIR TABLE:

No Enable H(f) Measurement: H(f) Response Reference Label Pair Channel Channel 3/CONTROL 2 . 1 3 4/CONTROL 2 5/CONTROL 2 3

## DOCUMENTATION

Display Text -Title 1: AMSU PHASE LOCK OSCILLATOR S/O 431618,S/O431615 Title 2: X AXIS TEST S/N F04,F03 P/N 1348360-1, 1348360 List Only Text -Title 3: Yes Prompt before Test: Data Storage -Off Mode: Message Log -Off Mode: Printing -Off

LEVEL SCHEDULE:

No Enable Level Schedule:

REMOTE COMMUNICATION TABLE:

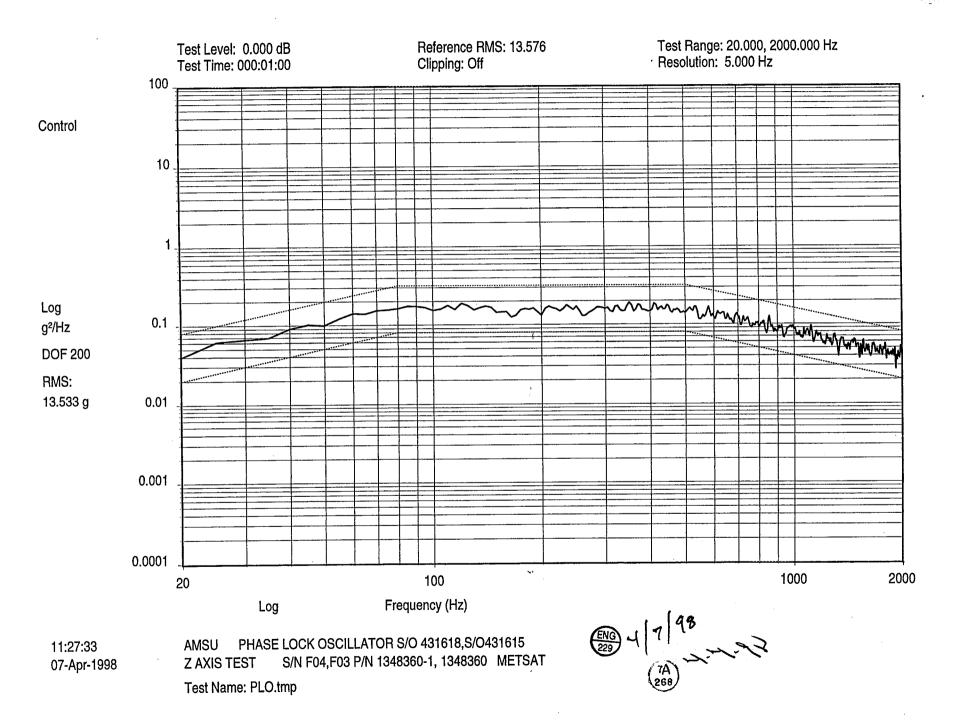
Automatic Plot:

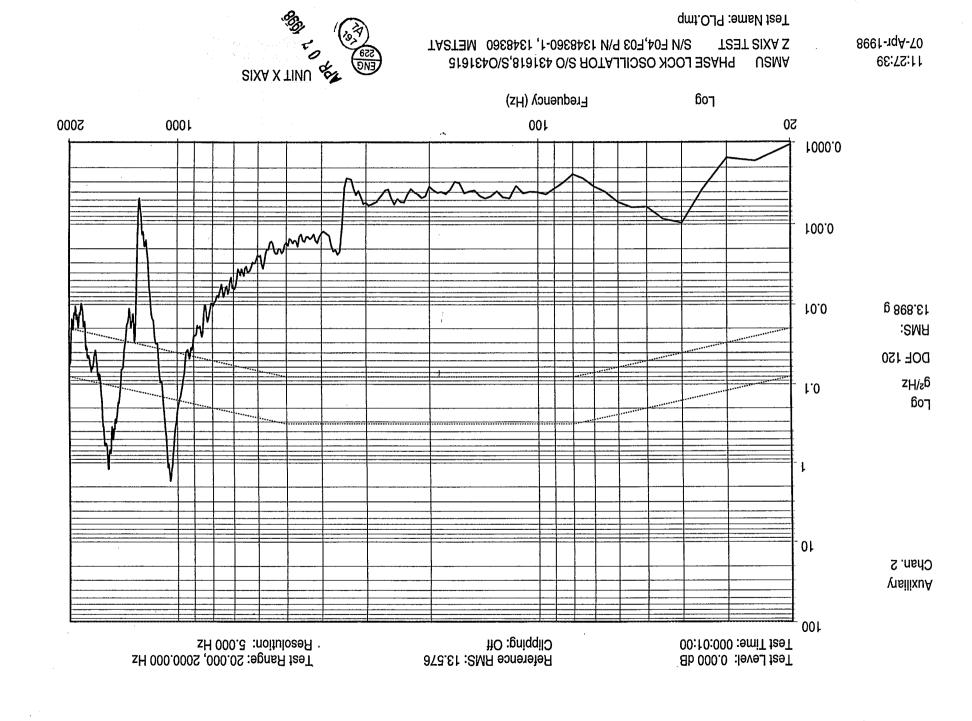
Enable Remote Communication: No

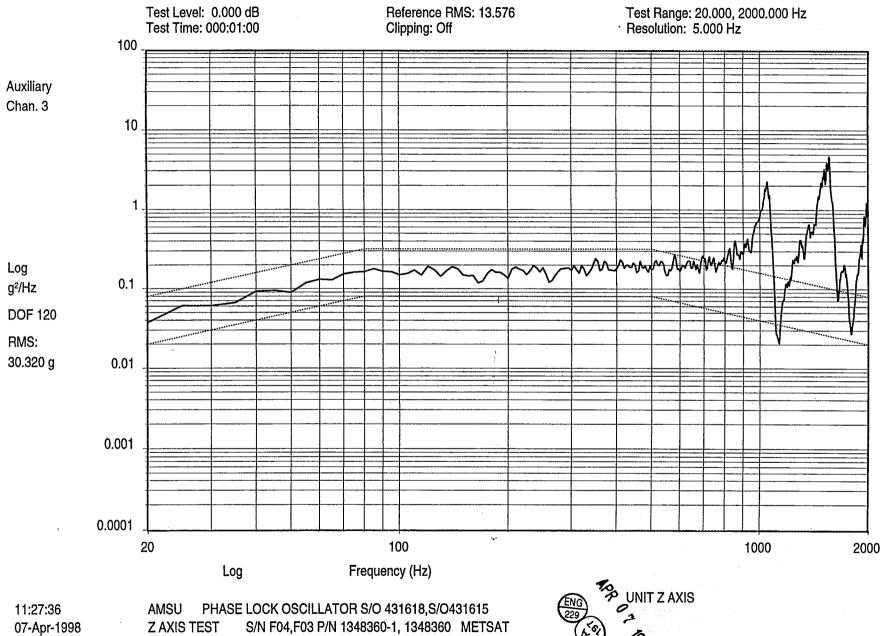
SHAKER LIMITS:

No Enable Shaker Limits:

End of Random Test

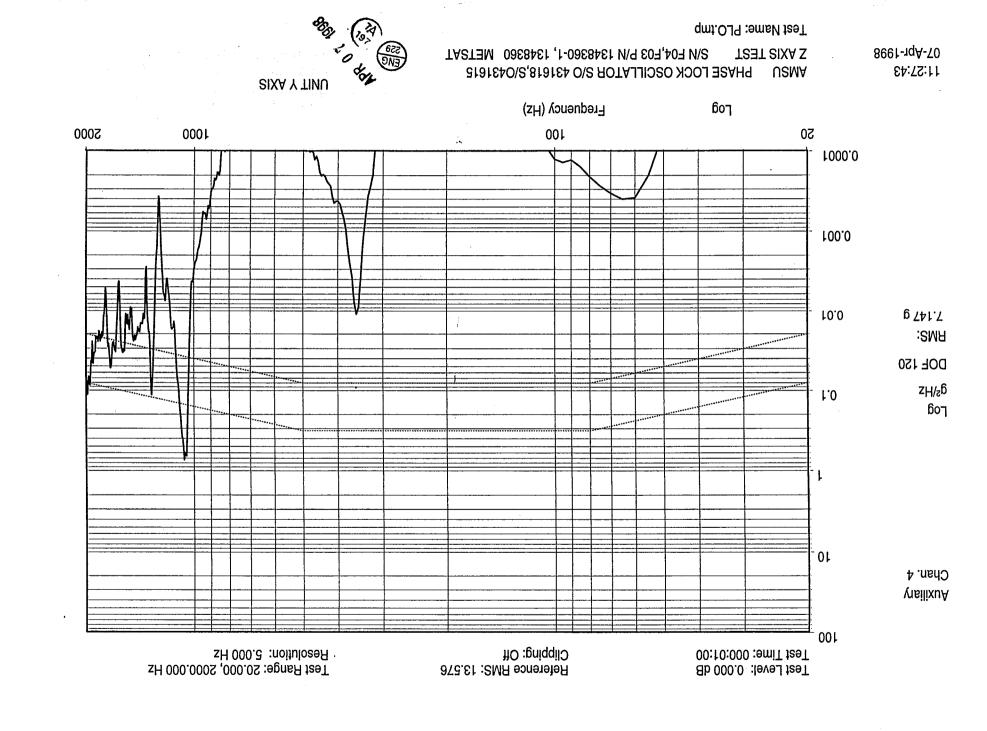






11:27:36 07-Apr-1998

PHASE LOCK OSCILLATOR S/O 431618,S/O431615 **AMSU ZAXIS TEST** S/N F04,F03 P/N 1348360-1, 1348360 METSAT



### Random Version 3.6.0 Test File Listing

File Name: Tue Apr 07 1998 11:20:53 Current Date: CONTROL PARAMETERS: DURATION -Test Time (hhh:mm:ss): 000:01:00 CONTROL STRATEGY -200 Degrees of Freedom: Control Spectrum: Average Kaiser-Bessel Output Window: OPERATION MODE -Enable Manual Operation: EQUALIZATION --18.0 dB Start Level: -18.0 dB Initial Test Level: Off Time at Initial Level: Off Prestored Drive: STARTUP/SHUTDOWN -20.0 dB/sec Startup Rate: Time to Full Level: 60.0 sec Level Increment: 2.0 dB Reset Measurement Average: Yes 20.0 dB/sec Shutdown Rate: REFERENCE TABLE: Value Slope -Alarm +Alarm -Abort +Abort Break Frequency (dB/oct) (dB) (dB) (dB) (dB)  $(g^2/Hz)$ Point (Hz) 3 3 -3 -6 6 1 0.04 20 3 80 0.16 500 0.16 5 2000 0.04 -3 6 TEST BANDWIDTH -20.00 Hz Minimum Frequency: 2000.00 Hz Maximum Frequency: 400.00 Lines Frequency Lines: 5.00 Hz Frequency Resolution: SPECTRUM DYNAMIC LIMITS -Overall RMS: 13.58 g RMS Maximum Acceleration (0-pk): 40.73 g Maximum Velocity (0-pk): 12.86 in/s 0.05 in Maximum Displacement (0-pk): IMPORT REFERENCE -Off Import: SAFETY PARAMETERS: ALARM/ABORTS -RMS Alarm: 21.9 g 31.0 g RMS Abort: 8 RMS Abort DOF: Control Signal Loss: Standard Spectral Lines Allowed Out -Alarm Lines: 60 Lines Abort Lines: 100 Lines Active Conditions -20.0 Hz Minimum Frequency: 2000.0 Hz Maximum Frequency: -12.0 dB Level: Enable for Manual Operation: Yes LOOP CHECK -100.0 mV RMS Noise Threshold: 300.0 mV RMS Maximum Drive:

No

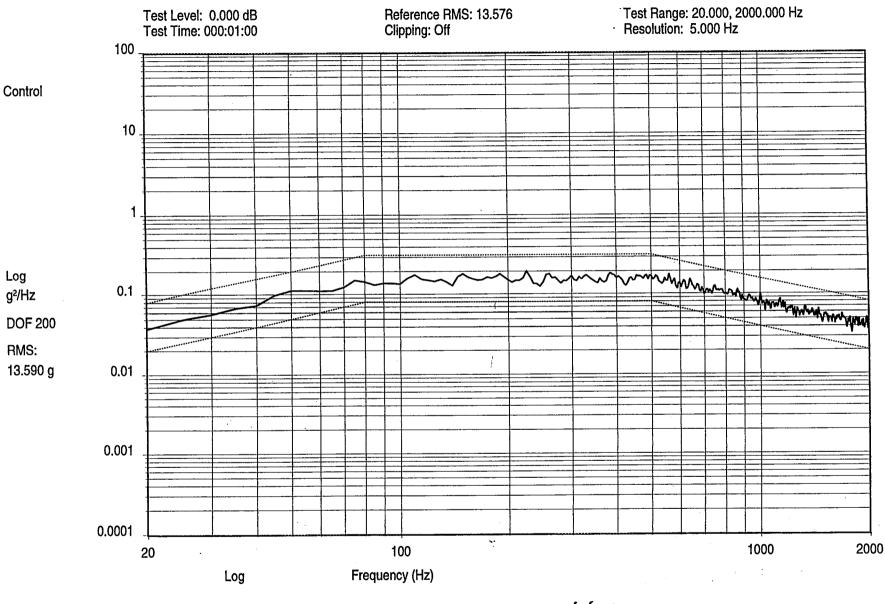
Pause after Loop Check:

Drive Clipping:

Off

CHANNEL TABLE:								
Channel Channel	Loop Sen			Transduce		Control	Profile	RMS Abo
Number Type	Check (mV					Weighting	Number	(Units
1 Control	Yes	10.00		Acceler	g	0.00		
2 Auxiliary	No	10.00		Acceler	g	•		
3 Auxiliary	No	10.00		Acceler	g			
4 Auxiliary	No	10.00		Acceler	g			
Channel Channel				Documentat	ion			
Number Type	Check (mV					Lab	el 2	
1 Control	Yes	10.00						
2 Auxiliary		10.00						
3 Auxiliary			UNIT Z A					
4 Auxiliary		10.00	UNIT Y A	XIS				
(12 Inactive Chan	nels)				·			
TRANSFER FUNCTION								
Enable H(f) Me		- 1 7	No			i i di		
H(f) Response		гарет		•				
Pair Channel		2 (00)	DOT					
1 3	2	3/CONT						
2 4	2 2	4/CONT						
3 5	2	SYCOMI	KON					
DOCUMENTATION						×		
Display Text -								
	MSU PH	ASE LOCK	OSCILLAT	OR S/O 431	618.S/	0431615		
	AXIS TEST	S	/N F04.F0	3 P/N 1348	360-1,	1348360	METSAT	
List Only Text		2	,	,	,			
Title 3:	•			W		<b>&gt;</b> :		
Prompt bef	ore Test:		Yes					
Data Storage -								
Mode:			Off					
Message Log -								
Mode:			Off					
Printing -								
Automatic	Plot:		Off					
LEVEL SCHEDULE:								
Enable Level S	chedule:		No					
DEMOND COMMUNICATION	ON MADITI-							
REMOTE COMMUNICATI Enable Remote		on.	No					
впарте кешоге	Communicati	011:	140					
SHAKER LIMITS:								
Enable Shaker			3.7 -					
	1.7 m 7 f c •		No					

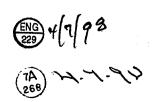
End of Random Test

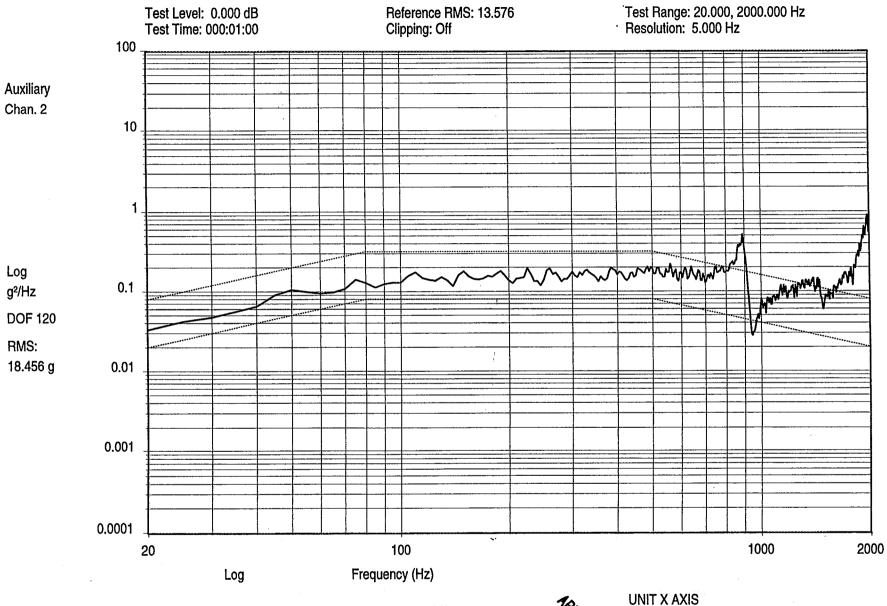


10:09:12 07-Apr-1998

PHASE LOCK OSCILLATOR S/O 431618,S/O431615 **AMSU** X AXIS TEST S/N F04,F03 P/N 1348360-1, 1348360

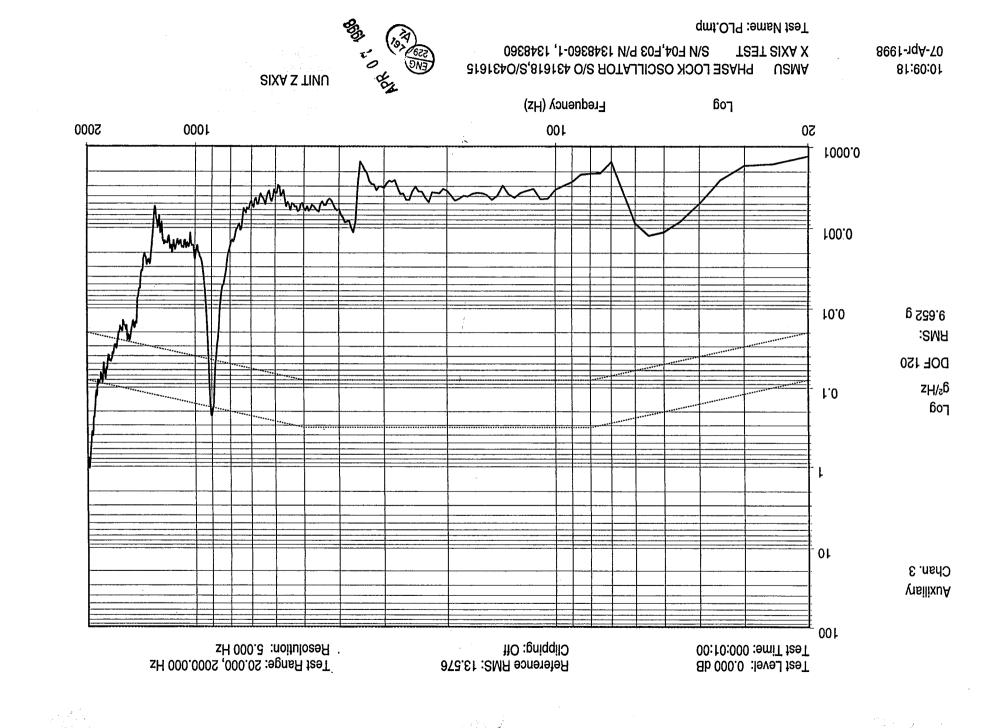


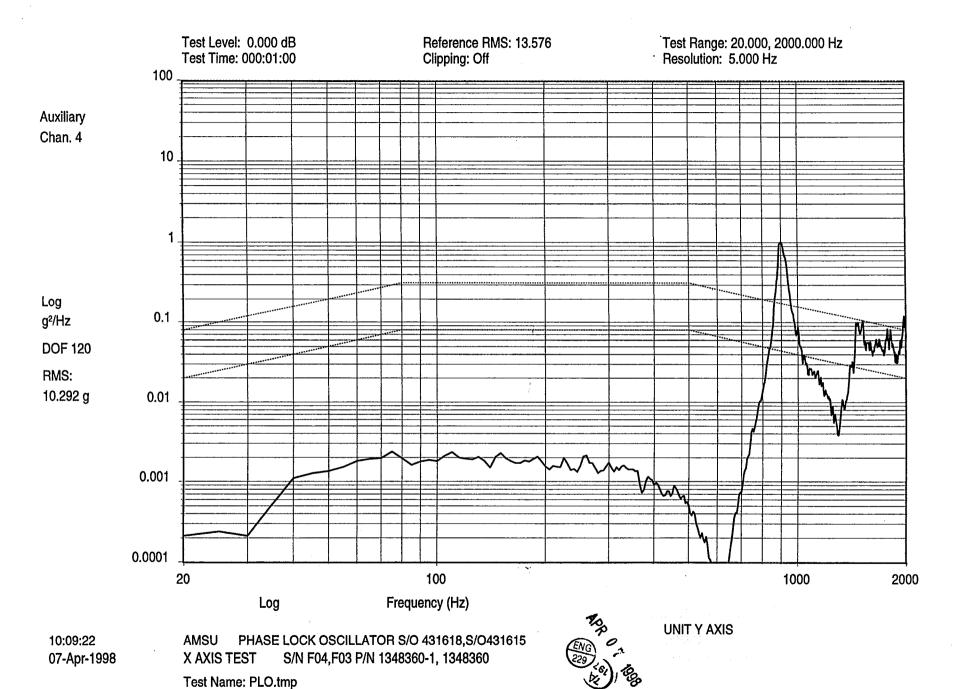




10:09:14 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR S/O 431618,S/O431615 X AXIS TEST S/N F04,F03 P/N 1348360-1, 1348360







# Random Version 3.6.0 Test File Listing

PLO File Name: Tue Apr 07 1998 09:49:32 Current Date: CONTROL PARAMETERS: DURATION -000:01:00 Test Time (hhh:mm:ss): CONTROL STRATEGY -200 Degrees of Freedom: Average Control Spectrum: Kaiser-Bessel Output Window: OPERATION MODE -Manual Operation: Enable EQUALIZATION -Start Level: -18.0 dB -18.0 dB Initial Test Level: Off Time at Initial Level: Off Prestored Drive: STARTUP/SHUTDOWN -20.0 dB/sec Startup Rate: Time to Full Level: 60.0 sec 2.0 dB Level Increment: Reset Measurement Average: Yes 20.0 dB/sec Shutdown Rate: REFERENCE TABLE: Slope -Alarm +Alarm -Abort +Abort Value Break Frequency  $(g^2/Hz)$ (dB/oct) (dB) (dB) (dB) (dB) Point (Hz) -3 3 -6 6 3 20 0.04 3 80 0.16 500 0.16 5 2000 0.04 -3 6 TEST BANDWIDTH -20.00 Hz Minimum Frequency: Maximum Frequency: 2000.00 Hz 400.00 Lines Frequency Lines: 5.00 Hz Frequency Resolution: SPECTRUM DYNAMIC LIMITS -13.58 g RMS Overall RMS: Maximum Acceleration (0-pk): 40.73 g 12.86 in/s Maximum Velocity (0-pk): 0.05 inMaximum Displacement (0-pk): IMPORT REFERENCE -Off Import: SAFETY PARAMETERS: ALARM/ABORTS -21.9 g RMS Alarm: RMS Abort: 31.0 g RMS Abort DOF: 8 Control Signal Loss: Standard Spectral Lines Allowed Out -60 Lines Alarm Lines: 100 Lines Abort Lines: Active Conditions -20.0 Hz Minimum Frequency: 2000.0 Hz Maximum Frequency: -12.0 dB Level: Enable for Manual Operation: Yes LOOP CHECK -100.0 mV RMS Noise Threshold: 300.0 mV RMS Maximum Drive:

No

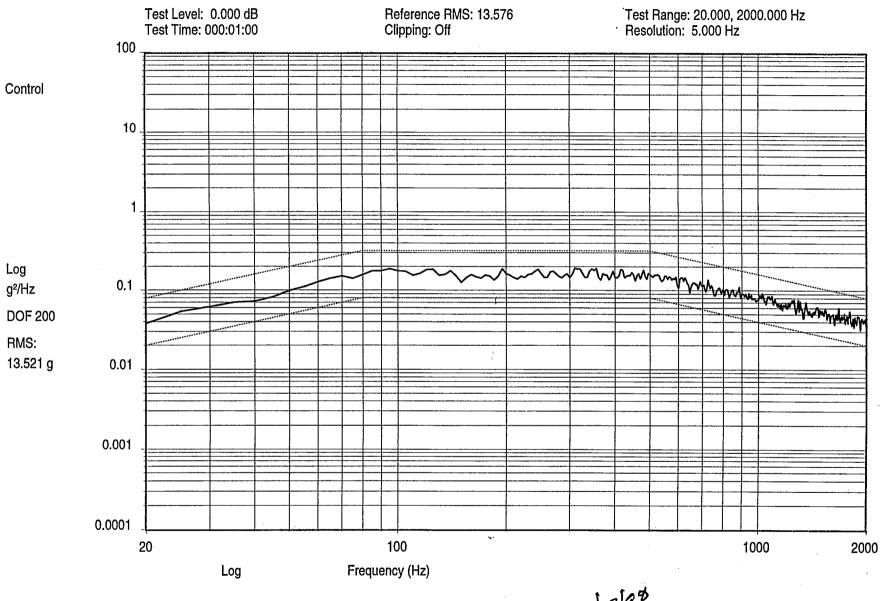
Pause after Loop Check:

End of Random Test

CHANNEL TABLE: Loop Sensitivity Input Transducer Control Profile RMS Abc Channel Channel Check (mV/Units) Coupling Type Units Weighting Number (Units, Yes 10.00 Null DC Acceler g 0.00

No 10.00 Null DC Acceler g

umber Type 1 Control Auxiliary Auxiliary Auxiliary Channel Channel Loop Sensitivity Channel Documentation Label 2 Check (mV/Units) Label 1 Number Type 10.00 CONTROL Control Yes 1 10.00 UNIT X AXIS Auxiliary No Auxiliary No Auxiliary No 10.00 UNIT Z AXIS 10.00 UNIT Y AXIS (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: No Enable H(f) Measurement: H(f) Response Reference Label Channel Channel Pair . 1 3 2 3/CONTROL 4/CONTROL 2. 4 2 2 5/CONTROL 3 DOCUMENTATION Display Text -Title 1: AMSU PHASE LOCK OSCILLATOR S/O 431618,S/O431615 Title 2: X AXIS TEST S/N F04,F03 P/N 1348360-1, 1348360 List Only Text -Title 3: Prompt before Test: Yes Data Storage -Off Mode: Message Log -Off Mode: Printing -Off Automatic Plot: LEVEL SCHEDULE: No Enable Level Schedule: REMOTE COMMUNICATION TABLE: Enable Remote Communication: No SHAKER LIMITS: Enable Shaker Limits: No

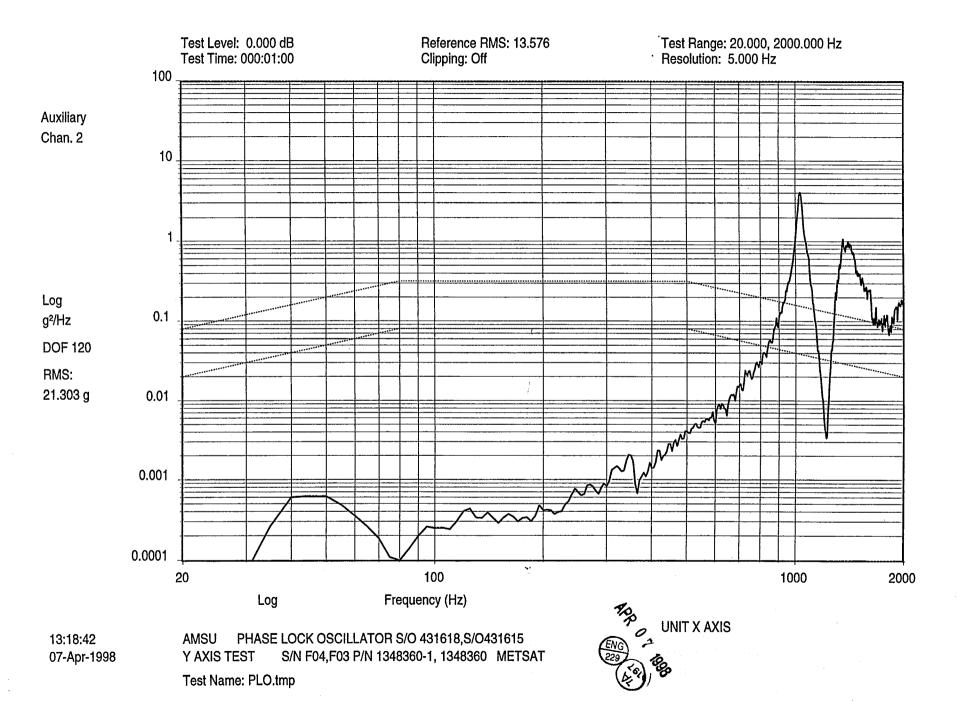


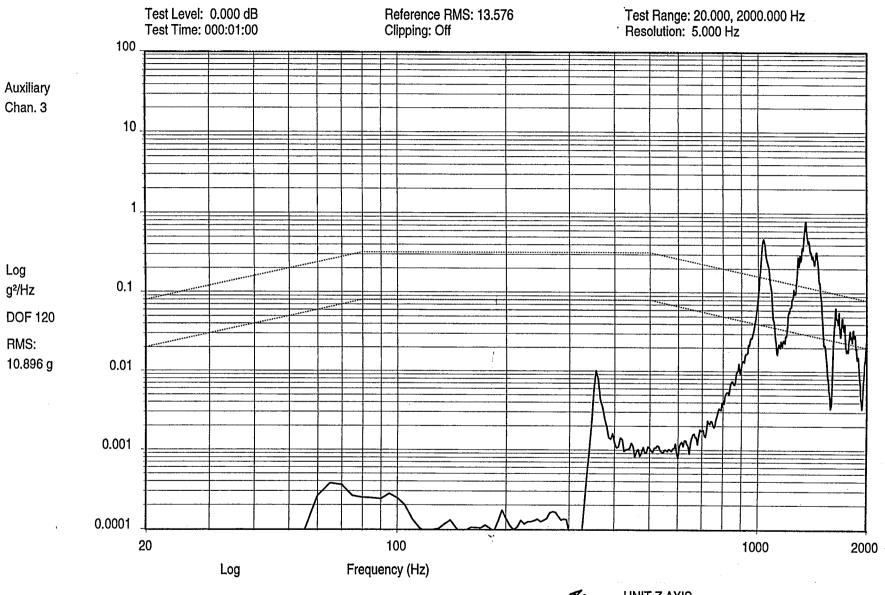
13:18:28 07-Apr-1998

PHASE LOCK OSCILLATOR S/O 431618,S/O431615 **AMSU** Y AXIS TEST S/N F04,F03 P/N 1348360-1, 1348360 METSAT

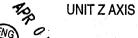
Test Name: PLO.tmp

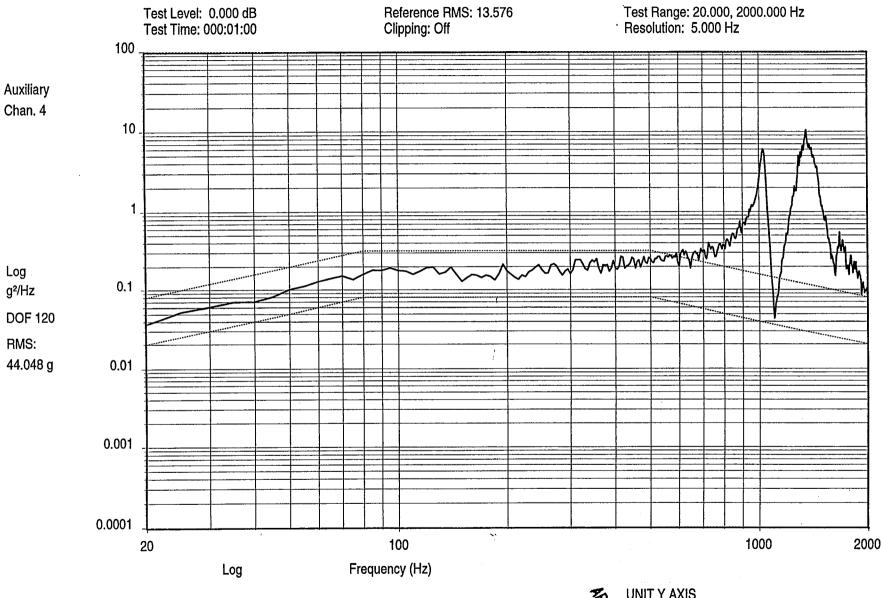
(B) 7 7 9 (B) 229 (B)





13:18:32 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR S/O 431618,S/O431615 Y AXIS TEST S/N F04,F03 P/N 1348360-1, 1348360 METSAT





13:18:37 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR S/O 431618,S/O431615
Y AXIS TEST S/N F04,F03 P/N 1348360-1, 1348360 METSAT



## Random Version 3.6.0 Test File Listing

Pause after Loop Check:

File Name: PLO urrent Date: Tue Apr 07 1998 13:11:52 CONTROL PARAMETERS: DURATION -Test Time (hhh:mm:ss): 000:01:00 CONTROL STRATEGY -Degrees of Freedom: 200 Control Spectrum: Average Output Window: Kaiser-Bessel OPERATION MODE -Manual Operation: Enable EQUALIZATION -Start Level: -18.0 dB Initial Test Level: -18.0 dB Time at Initial Level: Off Prestored Drive: Off STARTUP/SHUTDOWN -20.0 dB/sec Startup Rate: 60.0 sec Time to Full Level: Level Increment: 2.0 dB Reset Measurement Average: Yes Shutdown Rate: 20.0 dB/sec REFERENCE TABLE: +Alarm -Abort +Abort -Alarm Break Frequency Value Slope (dB) (dB) (dB) Point (Hz)  $(g^2/Hz)$ (dB/oct) (dB) -6 6 -3 3 1 3 2 20 0.04 3 0.16 80 500 0.16 5 2000 0.04 6 -3 TEST BANDWIDTH -Minimum Frequency: 20.00 Hz Maximum Frequency: 2000.00 Hz Frequency Lines: 400.00 Lines Frequency Resolution: 5.00 Hz SPECTRUM DYNAMIC LIMITS -Overall RMS: 13.58 g RMS Maximum Acceleration (0-pk): 40.73 g 12.86 in/s Maximum Velocity (0-pk): Maximum Displacement (0-pk): 0.05 in IMPORT REFERENCE -Off Import: SAFETY PARAMETERS: ALARM/ABORTS -RMS Alarm: 21.9 g RMS Abort: 31.0 g RMS Abort DOF: 8 Control Signal Loss: Standard Spectral Lines Allowed Out -Alarm Lines: 60 Lines Abort Lines: 100 Lines Active Conditions -Minimum Frequency: 20.0 Hz Maximum Frequency: 2000.0 Hz -12.0 dB Level: Enable for Manual Operation: Yes LOOP CHECK -Noise Threshold: 100.0 mV RMS Maximum Drive: 300.0 mV RMS

No

CHANNEL	TABLE:									
hannel	Channel	Loop	Sensitivity	Input	Transduce	r	Control	Profile	RMS Abort	
Number	Туре	Check	(mV/Units)	Coupling	Type	Units	Weighting	Number	(Units)	
1	Control	Yes	10.00	Null DC	Acceler	g	0.00			
2	Auxiliary	No	10.00	Null DC	Acceler	g	•			
3	Auxiliary	No	10.00	Null DC	Acceler	g				
4	Auxiliary	No	10.00	Null DC	Acceler	g				
Channel	Channel	Loop	Sensitivity	Channel I	Documentat	ion				
Number	Туре	Check	(mV/Units)	Label 1			Lab	el 2		
1	Control	Yes	10.00	CONTROL						
2	Auxiliary	No	10.00	UNIT X A	KIS					
3	Auxiliary	No	10.00	UNIT Z A	KIS			**		
4	Auxiliary	No	10.00	UNIT Y A	KIS					
(12 Ina	active Chann	els)								
	R FUNCTION P.									
Enal	ole H(f) Mea	suremer	ıt:	No						
H(f)	Response	Refere	ence Label							
Pair	c Channel	Chanr	nel							
1	3	. 2	3/CONT	ROL						
2	4	2	4/CONT	ROL						
. 3	5	2	5/CONT	ROL						
DOCUMENT										
Display Text -										
Title 1: AMSU PHASE LOCK OSCILLATOR S/O 431618,S/O431615										

Title 2: Y AXIS TEST S/N F04,F03 P/N 1348360-1, 1348360

List Only Text -

Title 3:

Prompt before Test: Yes

Data Storage -

Mode: Off

Message Log -

Mode: Off

Printing -

Automatic Plot: Off

LEVEL SCHEDULE:

Enable Level Schedule: No

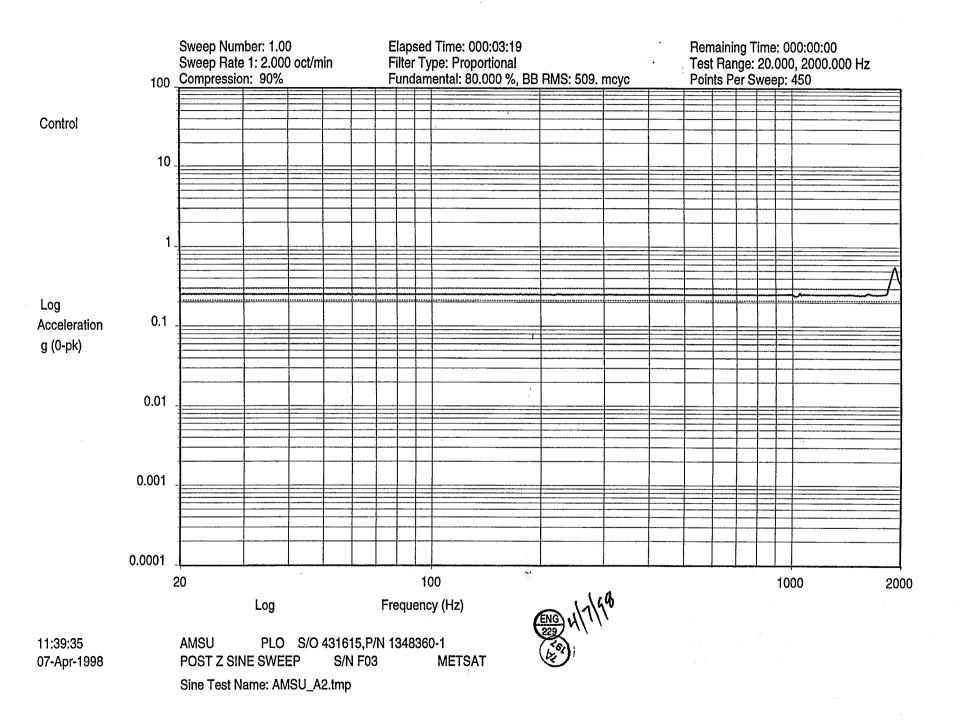
REMOTE COMMUNICATION TABLE:

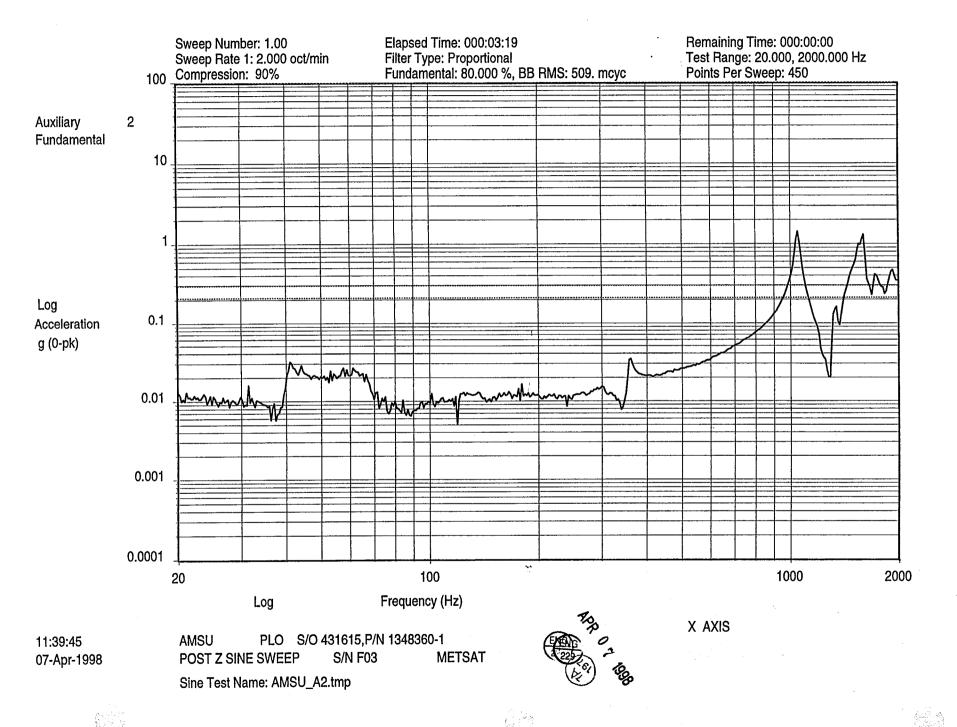
Enable Remote Communication: No

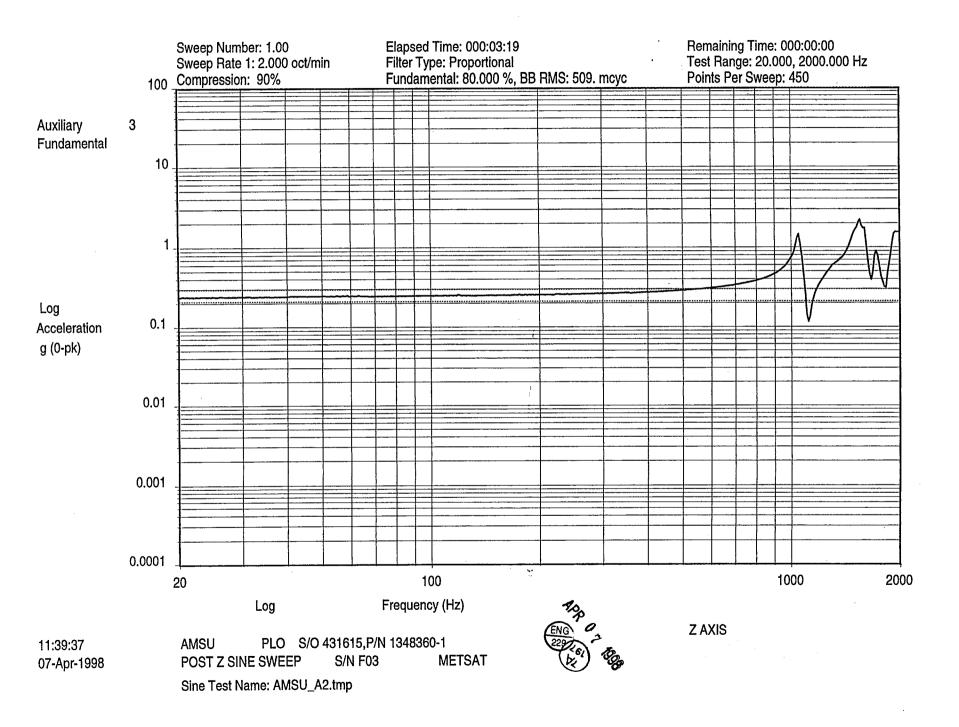
SHAKER LIMITS:

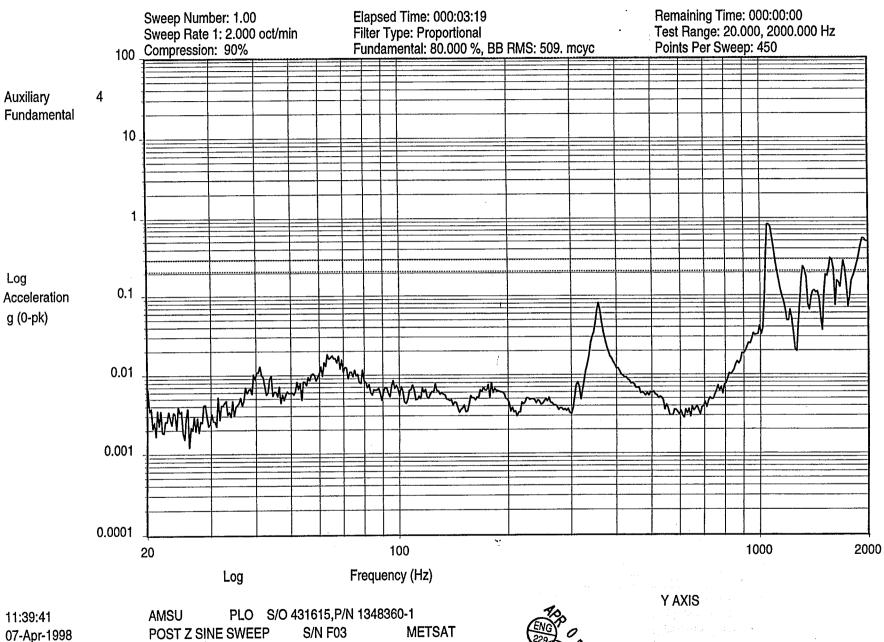
Enable Shaker Limits: No

End of Random Test

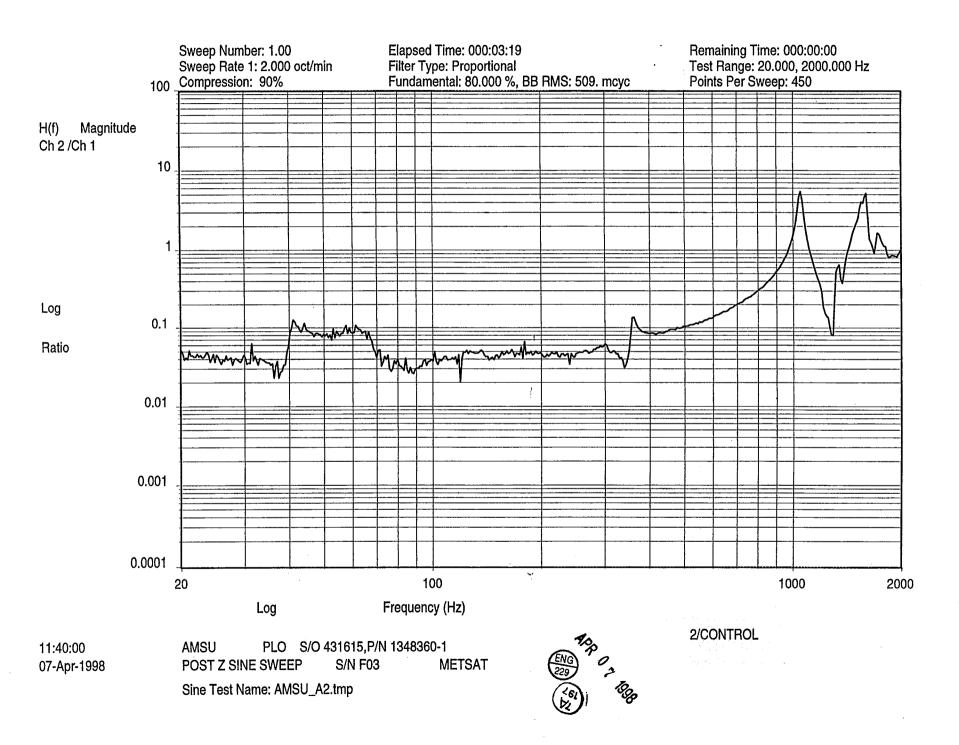


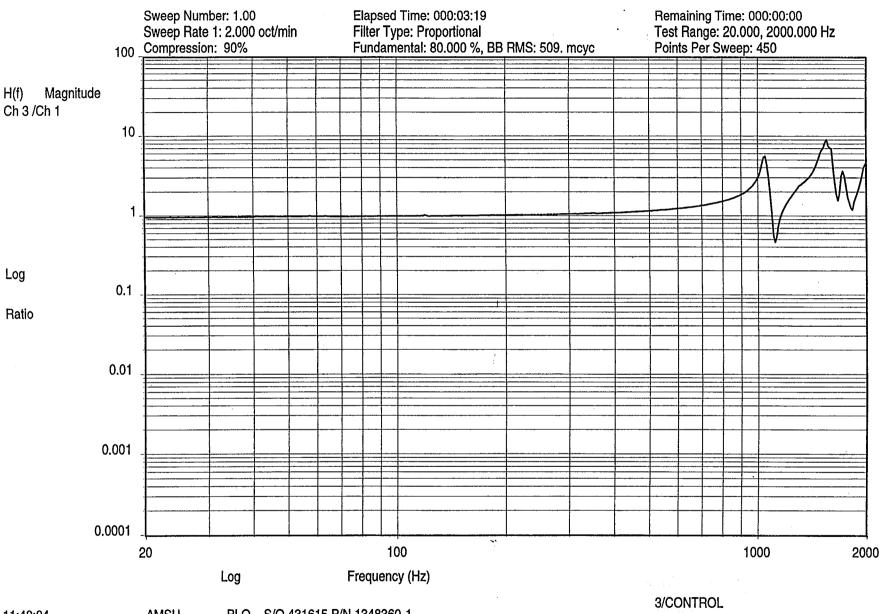






Sine Test Name: AMSU_A2.tmp





11:40:04 07-Apr-1998 **AMSU** 

PLO S/O 431615,P/N 1348360-1

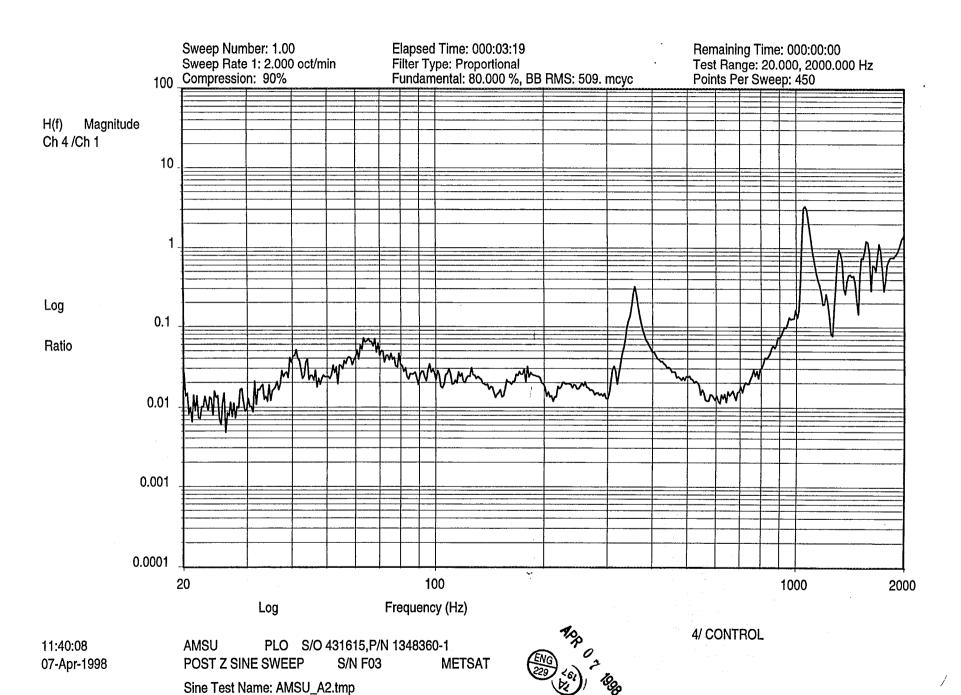
POST Z SINE SWEEP

S/N F03

**METSAT** 

Sine Test Name: AMSU_A2.tmp





Active Frequency Range -

Minimum Frequency:

Maximum Frequency:

```
File Name:
                                 AMSU_A2
Current Date:
                                 Tue Apr 07 1998 11:30:34
CONTROL PARAMETERS:
    DURATION -
        Type:
                                     Sweeps
        Sweeps:
                                        1.00
        Test Time (hhh:mm:ss):
                                     000:03:19
    CONTROL STRATEGY -
        Control Spectrum:
                                     Average
        Filter Type:
                                     Proportional
        Filter Specification:
                                     Fundamental
                                                   80.00 %, RMS 509. mcyc
    EQUALIZATION -
        Test Level:
                                        0.00 dB
    OPERATION MODE -
       Manual Operation:
                                    Enable
    STARTUP/SHUTDOWN -
        Startup Rate:
                                       10.00 dB/sec
                                      20.00 dB/sec
        Shutdown Rate:
       Level Increment:
                                       0.10 dB
    COMPRESSION PARAMETERS -
       Manual Override:
                                     Enable
       Record Manual Changes:
                                     Disable
    SWEEP PARAMETERS -
       Manual Sweep Start:
                                        No
        Sweep Mode:
                                       Log
        Sweep Rate Definition:
                                    100%50%25%
        Sweep Rate 1:
                                       2.0000 Oct/min
        Sweep Rate 2:
                                      1.0000 Oct/min
        Sweep Rate 3:
                                      0.5000 Oct/min
       Sweep Duration (hhh:mm:ss): 000:03:19
       Manual Override:
                                     Enable
       Record Manual Changes:
                                     Disable
    SWEEP/COMPRESSION TABLE -
     Segment
               Frequency
                               Rate
                                       Compression
    Number
                 (Hz)
                             (Oct/min)
                                         (왕)
       1
                  2000
                                          90
                                2
REFERENCE TABLE:
     Units for Acceleration, Velocity and Displacement: g, in/s, in
                                       Value -Alarm +Alarm -Abort
                                                                         +Abort
    Segment Frequency Type
                                                        (dB)
                                                                  (đB)
                                                                           (dB)
                                                (dB)
   Number
                                      (Units)
            (Hz)
                                                         1.5
                                                                  -20
                                                                           20
                                                -1.5
            2000
      1
                       Acceleration
                                       0.25
    REFERENCE PARAMETERS -
                                       20.000 Hz
       Minimum Frequency:
                                    2000.000 Hz
       Maximum Frequency:
                                     20.000 Hz
       Transducer Crossover:
       Crossover Range:
                                      10.000 %
        Frequency Points:
                                     450.000
        Box Tolerance:
                                    Disable
    IMPORT REFERENCE -
        Import:
                                       Off
    SPECTRUM DYNAMIC LIMITS -
        Acceleration Range:
                                        0.000 dB
       Maximum Acceleration (0-pk): 0.250 g
Maximum Acceleration (0-pk): 0.250 g
Maximum Velocity (0-pk):
        Maximum Velocity (0-pk):
                                        0.768 in/s
                                      0.012 in
       Maximum Displacement (pk-pk):
SAFETY PARAMETERS:
    ALARM/ABORTS -
```

20.00 Hz

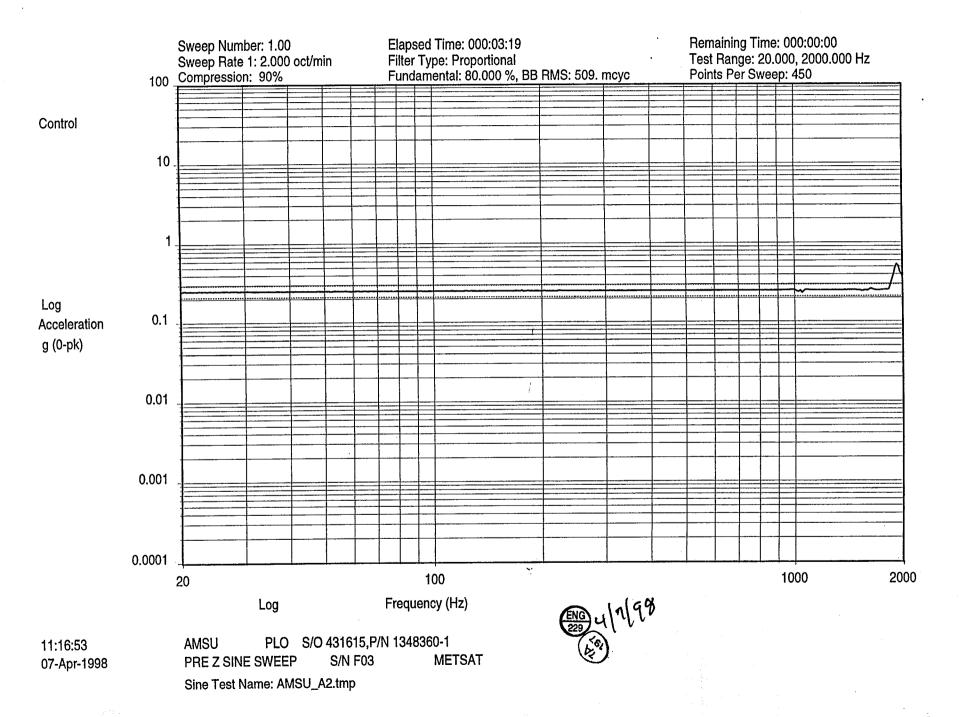
2000.00 Hz

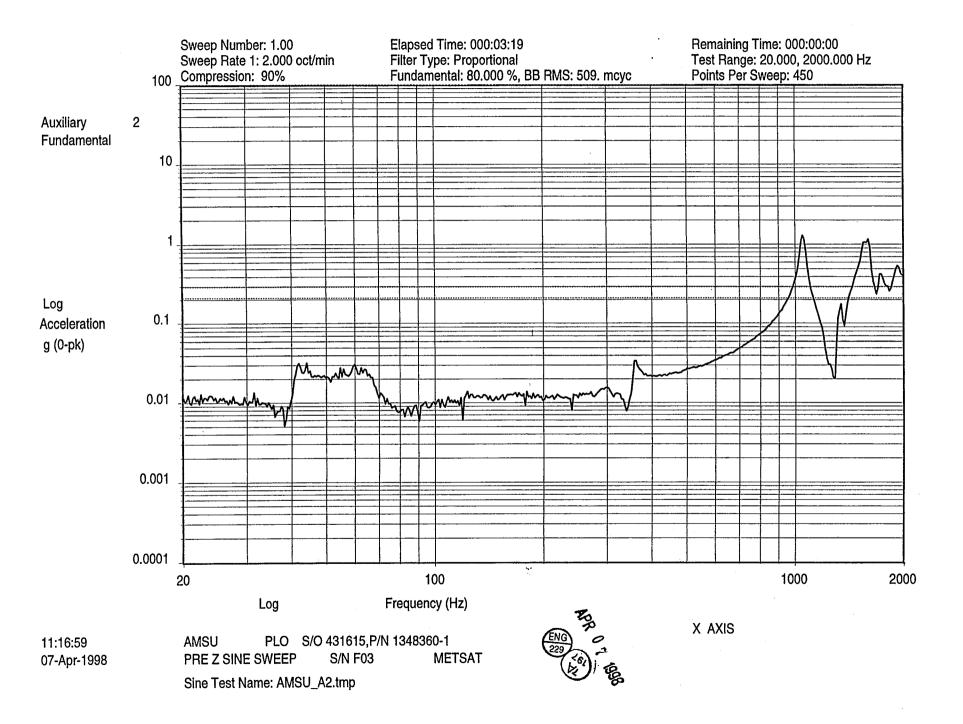
Enable for Manual Mode: Yes Reference CSL Threshold: 20.00 dB CSL Count Threshold: 5 LOOP CHECK -Noise Threshold: 30.00 mV RMS Frequency: 100.00 Hz Maximum Drive: 100.00 mV RMS Pause after Loop Check: No DRIVE SIGNAL -Maximum Drive: 10.00 Vpeak Attenuated Output Delay: 0.00 Seconds CHANNEL TABLE: Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement Check (mV/Units) Coupling Type Units Weighting Number Process
Yes 100.00 Nulled DC Acceler g 0.00 Fundamen
No 10.00 Nulled DC Acceler g Fundamen Number Type Control 1 Fundamental Auxiliary Fundamental No No 10.00 Nulled DC Acceler g 3 Auxiliary Fundamental Auxiliary 4 10.00 Nulled DC Acceler g Fundamental (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation Check (mV/Units) Label 1 Number Type Label 2 Yes 1 Control 100.00 CONTROL 2 Auxiliary 10.00 X AXIS No 10.00 3 Auxiliary No Z AXIS Auxiliary No 10.00 Y AXIS (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Enable H(f) Measurement: Yes H(f) Response Reference Label Pair Channel Channel 1 . 2 1 2/CONTROL 2 3 1 3/CONTROL 3 4 1 4/ CONTROL DOCUMENTATION: Display Text -Title 1: AMSU PLO S/O 431615, P/N 1348360-1 S/N F03 METSAT Title 2: POST Z SINE SWEEP List Only Text -Title 3: Prompt before Test: Yes Data Storage -Storage Mode: Off Message Log -Log Mode: Off Printing -Automatic Plot: Off REMOTE COMMUNICATION TABLE: Enable Remote Communication: No SHAKER LIMITS:

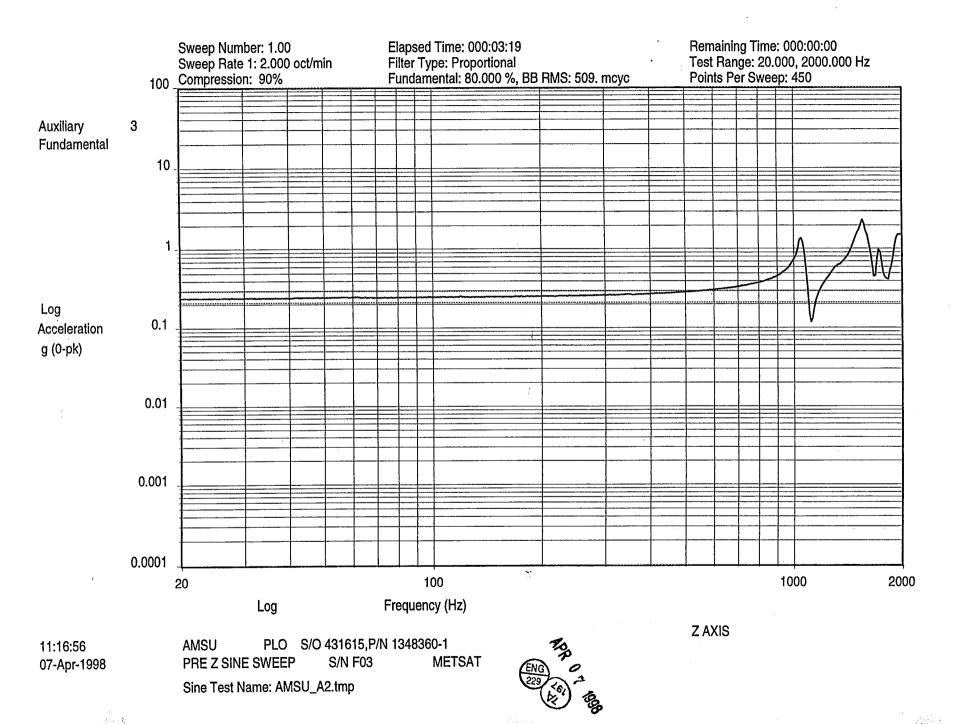
MO

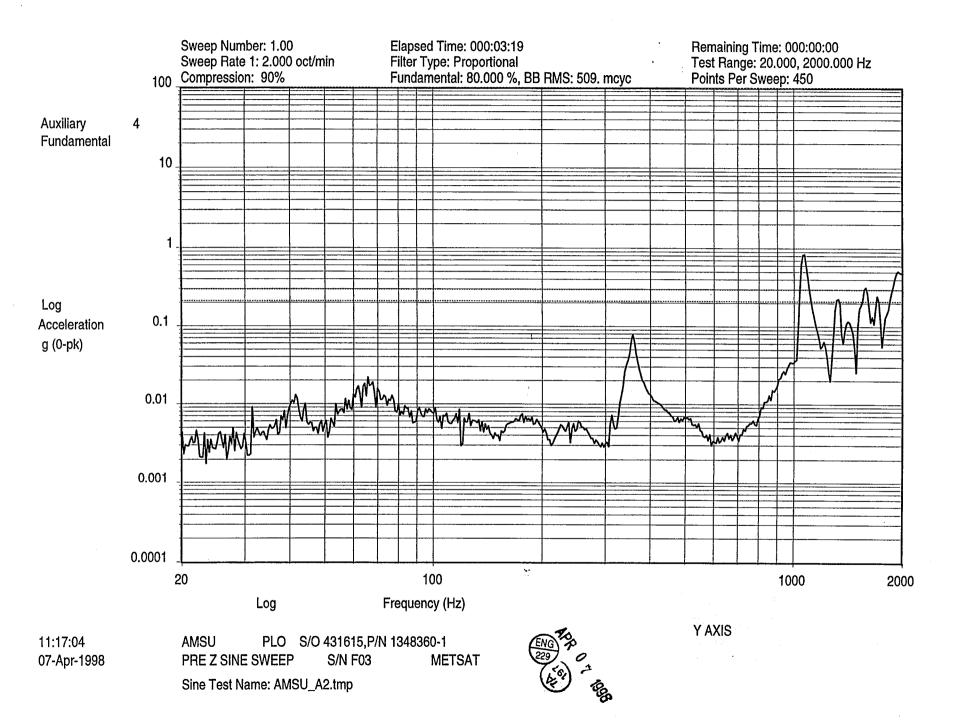
Enable Shaker Limits:

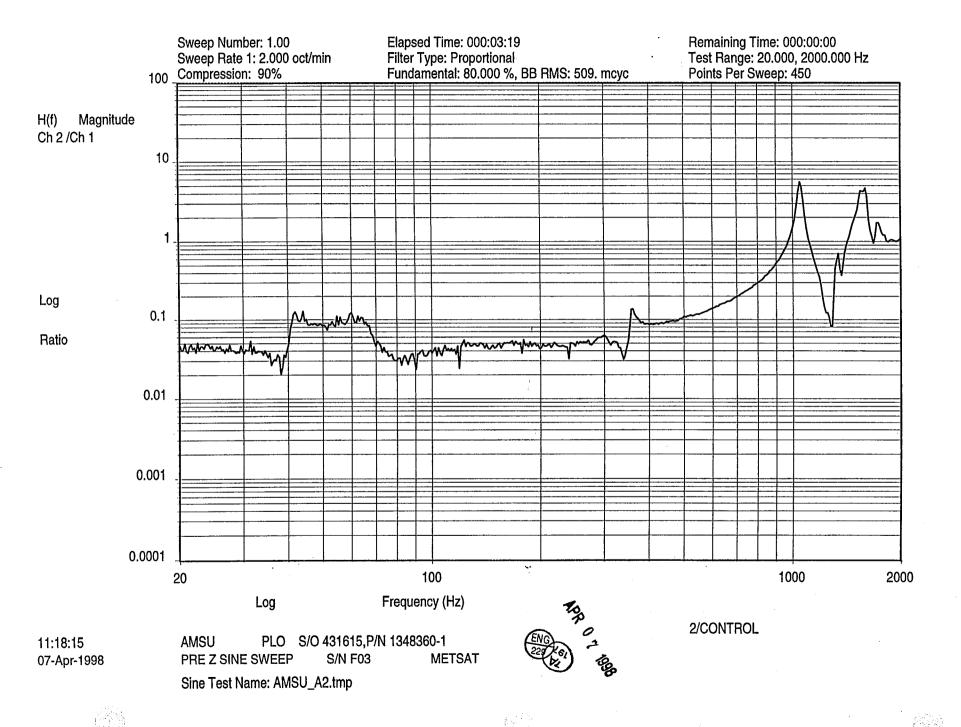
End of Sine Test List

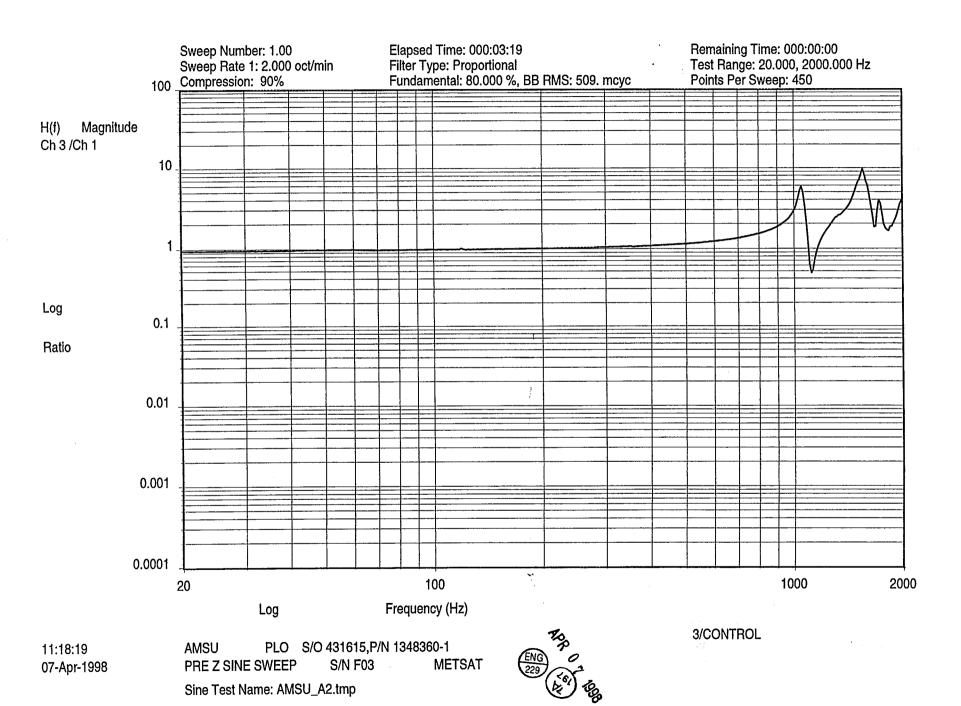


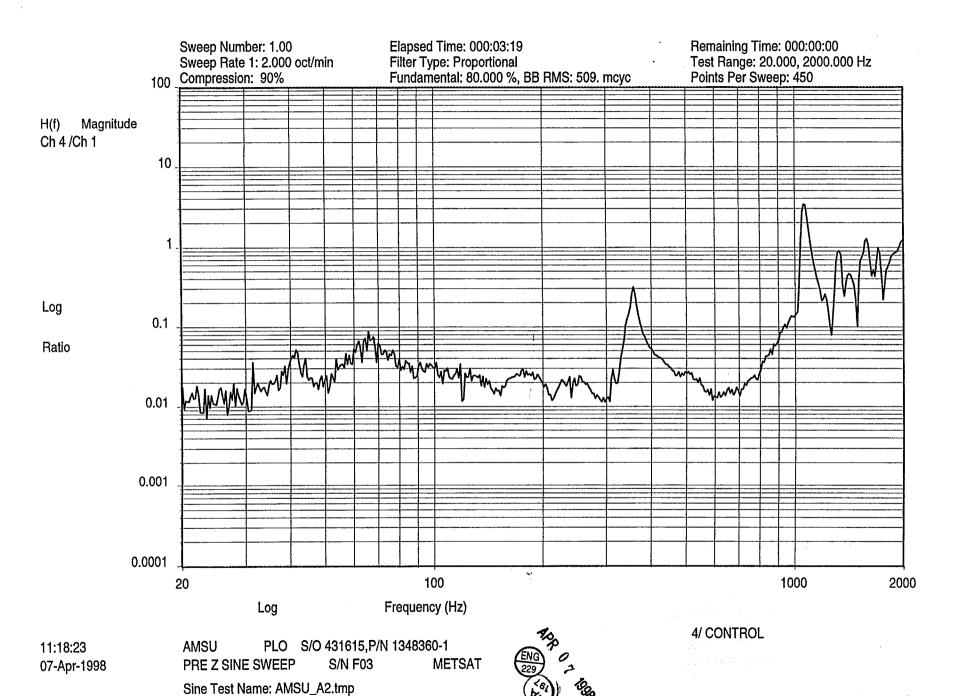












AMSU_A2 File Name: Tue Apr 07 1998 11:09:29 Current Date: CONTROL PARAMETERS: DURATION -Sweeps Type: 1.00 Sweeps: 000:03:19 Test Time (hhh:mm:ss): CONTROL STRATEGY -Average Control Spectrum: Proportional Filter Type: 80.00 %, RMS 509. mcyc Fundamental Filter Specification: EQUALIZATION -0.00 dB Test Level: OPERATION MODE -Enable Manual Operation: STARTUP/SHUTDOWN -10.00 dB/sec Startup Rate: 20.00 dB/sec Shutdown Rate: 0.10 dB Level Increment: COMPRESSION PARAMETERS -Enable 'Manual Override: Disable Record Manual Changes: SWEEP PARAMETERS -No Manual Sweep Start: Log Sweep Mode: 100%50%25% Sweep Rate Definition: 2.0000 Oct/min Sweep Rate 1: 1.0000 Oct/min Sweep Rate 2: 0.5000 Oct/min Sweep Rate 3: Sweep Duration (hhh:mm:ss): 000:03:19 Enable Manual Override: Disable Record Manual Changes: SWEEP/COMPRESSION TABLE -Segment Frequency Rate Compression Number (Hz) (Oct/min) (융) 2 90 1 2000 REFERENCE TABLE: Units for Acceleration, Velocity and Displacement: g, in/s, in -Alarm +Alarm -Abort +Abort Value Type Segment Frequency (dB) (dB) (dB) (dB) (Units) Number (Hz) -1.51.5 -20 20 Acceleration 0.25 1 2000 REFERENCE PARAMETERS -20.000 Hz Minimum Frequency: 2000.000 Hz Maximum Frequency: 20.000 Hz Transducer Crossover: 10.000 % Crossover Range: 450.000 Frequency Points: Disable Box Tolerance: IMPORT REFERENCE -Off Import: SPECTRUM DYNAMIC LIMITS -0.000 dB Acceleration Range: 0.250 g Minimum Acceleration (0-pk): 0.250 g Maximum Acceleration (0-pk): 0.768 in/s Maximum Velocity (0-pk): 0.012 in Maximum Displacement (pk-pk): SAFETY PARAMETERS: ALARM/ABORTS -Active Frequency Range -

20.00 Hz

2000.00 Hz

Minimum Frequency:

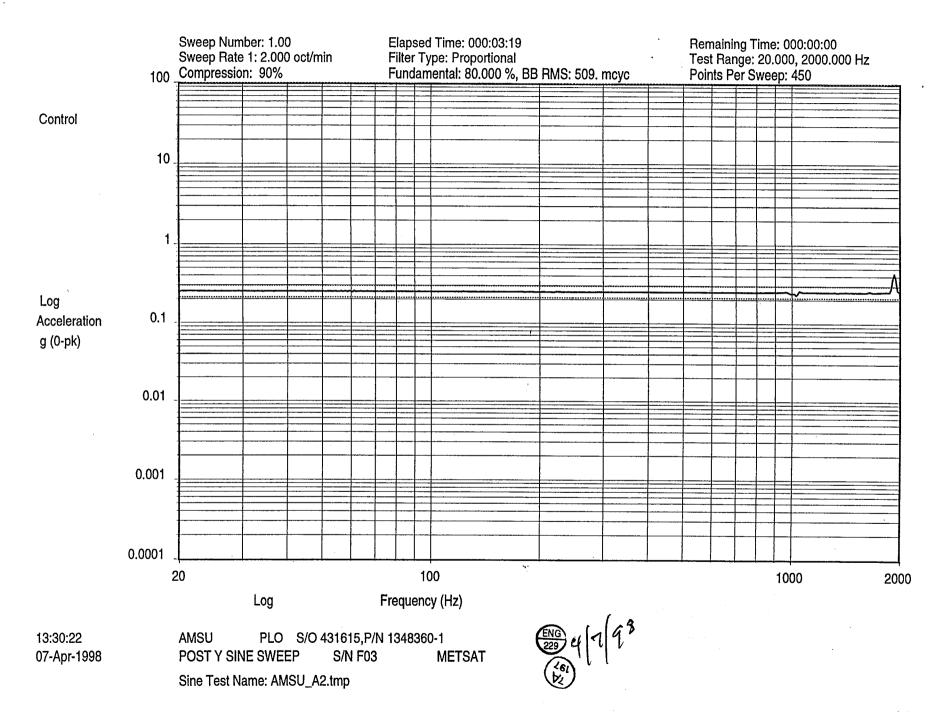
Maximum Frequency:

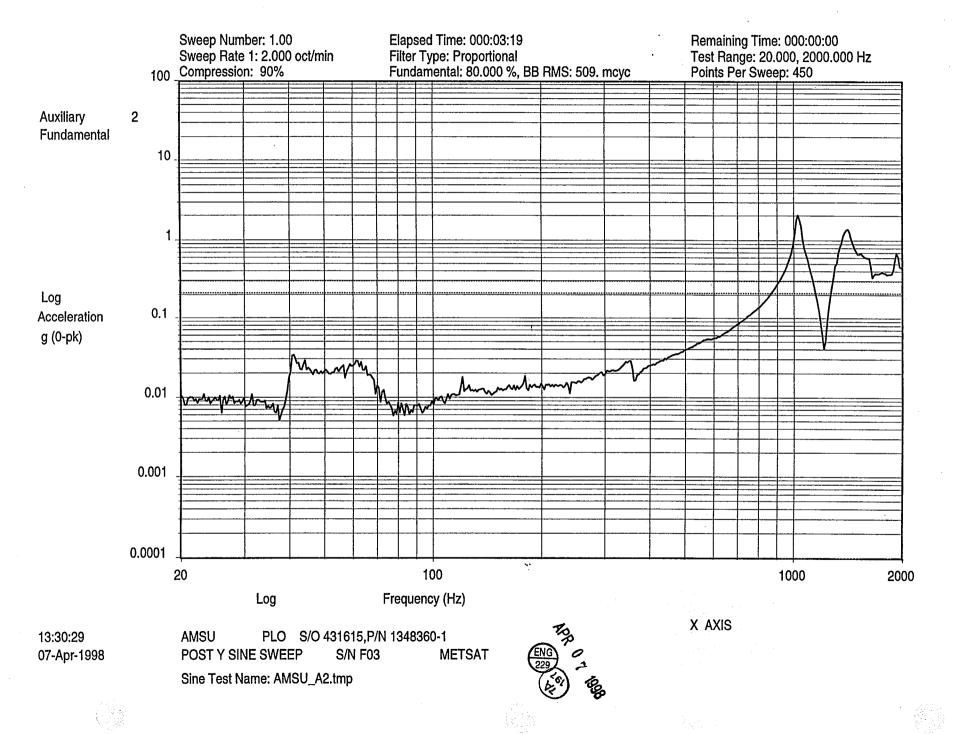
20.00 dB Reference CSL Threshold: 5 CSL Count Threshold: LOOP CHECK -30.00 mV RMS Noise Threshold: 100.00 Hz Frequency: 100.00 mV RMS Maximum Drive: Pause after Loop Check: No DRIVE SIGNAL -10.00 Vpeak Maximum Drive: 0.00 Seconds Attenuated Output Delay: CHANNEL TABLE: Loop Sensitivity Input Transducer Control Profile Measurement Channel Channel Check (mV/Units) Coupling Type Units Weighting Number Process Number Type Control Yes 100.00 Nulled DC Acceler g
Auxiliary No 10.00 Nulled DC Acceler g 0.00 Fundamental 1 10.00 Nulled DC Acceler g 10.00 Nulled DC Acceler g Fundamental 2 No No No 3 Auxiliary Fundamental 10.00 Nulled DC Acceler g Fundamental 4 Auxiliary (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation Check (mV/Units) Label 1 Number Type Label 2 Yes 100.00 CONTROL 1. Control 10.00 X AXIS Auxiliary No 10.00 Z AXIS Auxiliary No No 10.00 Y AXIS Auxiliary (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Enable H(f) Measurement: Yes H(f) Response Reference Label Channel Channel Pair 2 1 2/CONTROL 1 2 1 3/CONTROL 1 4/ CONTROL 3 DOCUMENTATION: Display Text -PLO S/O 431615, P/N 1348360-1 Title 1: AMSU Title 2: PRE Z SINE SWEEP S/N F03 METSAT List Only Text -Title 3: Yes Prompt before Test: Data Storage -Off Storage Mode: Message Log -Off Log Mode: Printing -Off Automatic Plot: REMOTE COMMUNICATION TABLE: Enable Remote Communication: No SHAKER LIMITS: Enable Shaker Limits: No

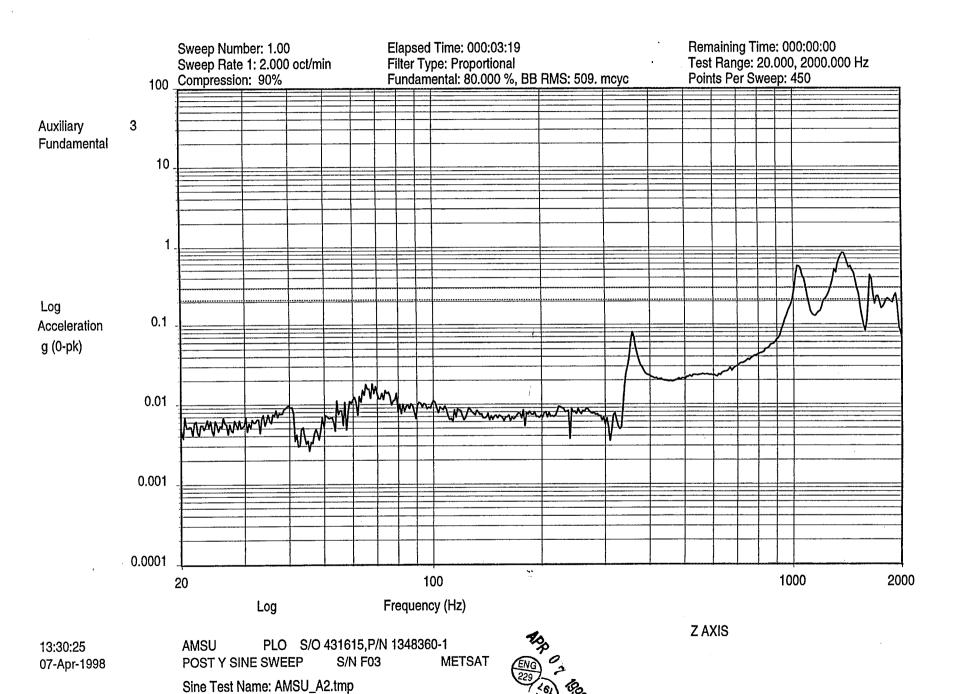
Yes

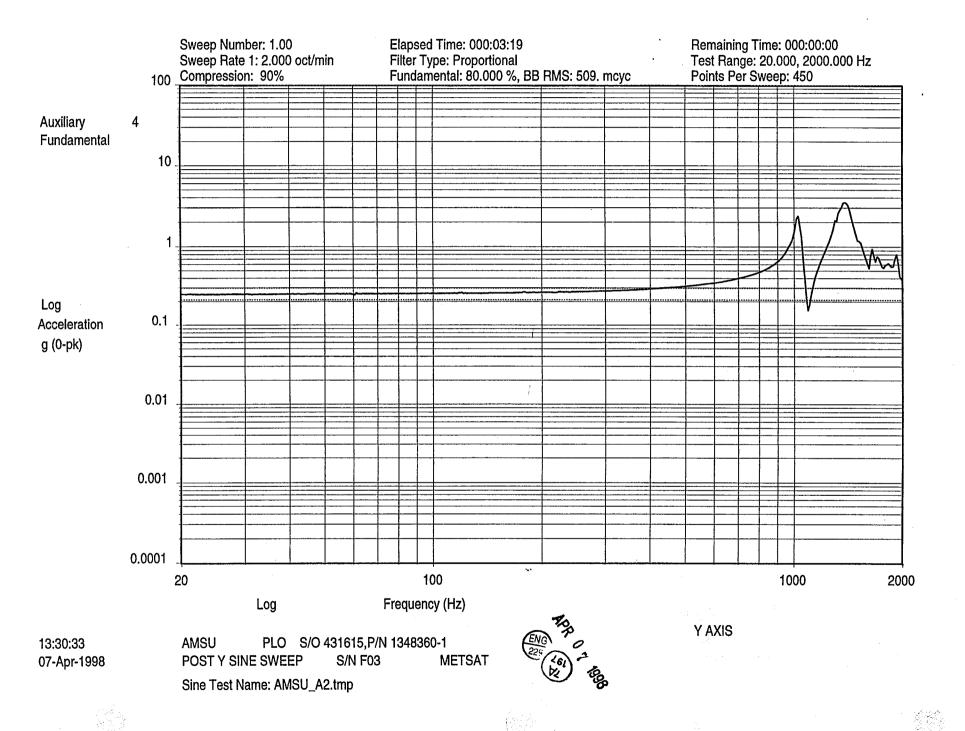
Enable for Manual Mode:

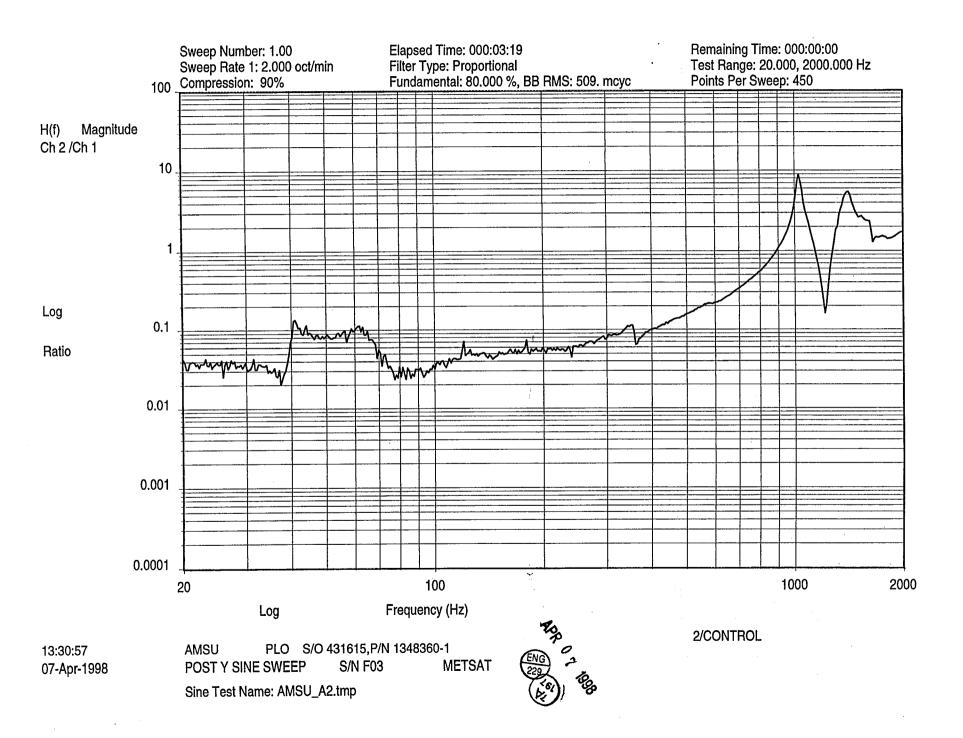
End of Sine Test List

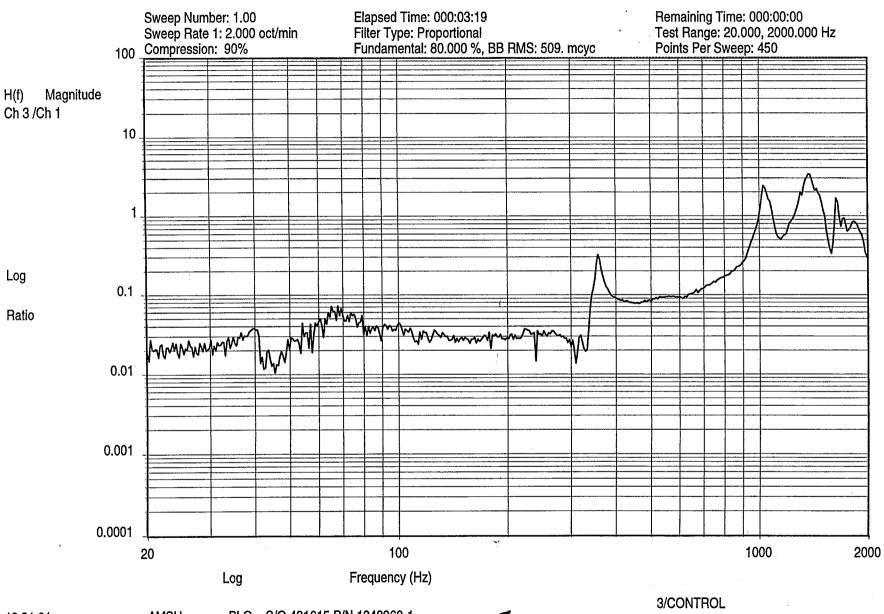












13:31:01 07-Apr-1998 AMSU

PLO S/O 431615,P/N 1348360-1

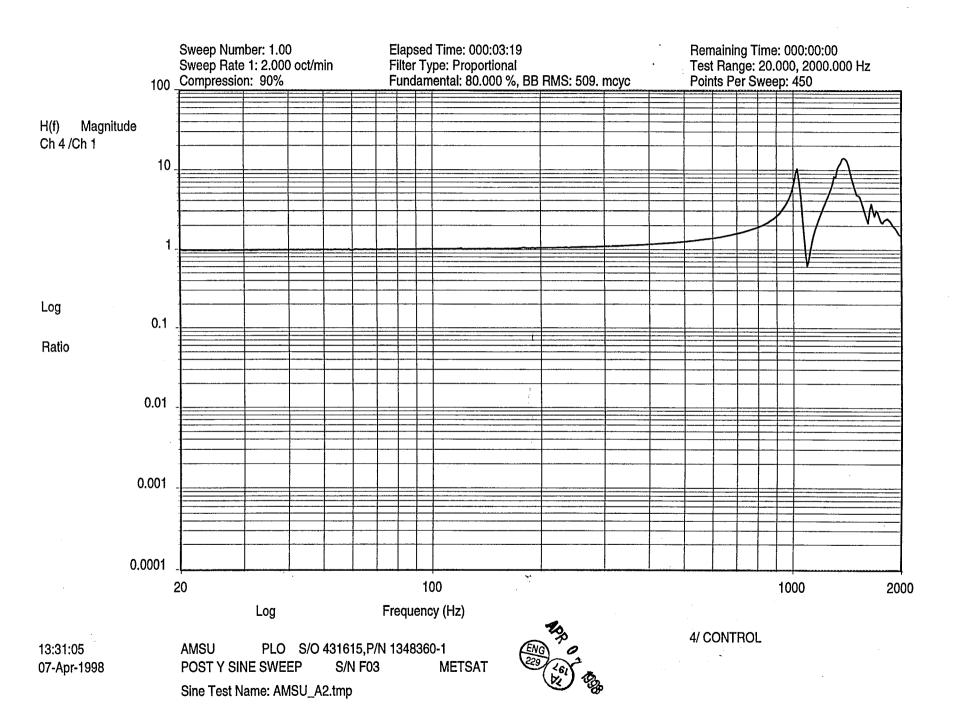
POST Y SINE SWEEP

S/N F03

METSAT

Sine Test Name: AMSU_A2.tmp





#### Sine Version 4.6.0 Test File Listing

Minimum Frequency:

Maximum Frequency:

```
File Name:
                                 AMSU A2
Current Date:
                                 Tue Apr 07 1998 13:23:36
CONTROL PARAMETERS:
   DURATION -
       Type:
                                     Sweeps
                                        1.00
       Sweeps:
       Test Time (hhh:mm:ss):
                                     000:03:19
    CONTROL STRATEGY -
       Control Spectrum:
                                     Average
       Filter Type:
                                     Proportional
                                                   80.00 %, RMS 509. mcyc
       Filter Specification:
                                     Fundamental
    EQUALIZATION -
       Test Level:
                                        0.00 dB
    OPERATION MODE -
                                     Enable
       Manual Operation:
    STARTUP/SHUTDOWN -
       Startup Rate:
                                       10.00 dB/sec
                                       20.00 dB/sec
       Shutdown Rate:
       Level Increment:
                                        0.10 dB
    COMPRESSION PARAMETERS -
       Manual Override:
                                     Enable
       Record Manual Changes:
                                     Disable
    SWEEP PARAMETERS -
       Manual Sweep Start:
                                        No
       Sweep Mode:
                                       Log
                                     100%50%25%
       Sweep Rate Definition:
        Sweep Rate 1:
                                       2.0000 Oct/min
                                       1.0000 Oct/min
       Sweep Rate 2:
       Sweep Rate 3:
                                       0.5000 Oct/min
       Sweep Duration (hhh:mm:ss): 000:03:19
       Manual Override:
                                     Enable
       Record Manual Changes:
                                     Disable
    SWEEP/COMPRESSION TABLE -
     Segment
               Frequency
                               Rate
                                       Compression
    Number
                                         (%)
                  (Hz)
                             (Oct/min)
       1
                  2000
                                          90
                                2
REFERENCE TABLE:
     Units for Acceleration, Velocity and Displacement: g, in/s, in
                                               -Alarm +Alarm -Abort
                                                                          +Abort
                                       Value
    Segment Frequency
                          Type
                                                                  (dB)
                                                                           (dB)
                                                (dB)
                                                        (dB)
    Number
                                      (Units)
             (Hz)
                                                         1.5
                                                                  -20
                                                                            20
                                                -1.5
            2000
      1
                       Acceleration
                                       0.25
    REFERENCE PARAMETERS -
                                       20.000 Hz
       Minimum Frequency:
                                     2000.000 Hz
       Maximum Frequency:
                                      20.000 Hz
       Transducer Crossover:
        Crossover Range:
                                      10.000 %
        Frequency Points:
                                     450.000
       Box Tolerance:
                                    Disable
    IMPORT REFERENCE -
        Import:
                                       Off
    SPECTRUM DYNAMIC LIMITS -
                                        0.000 dB
        Acceleration Range:
       Minimum Acceleration (0-pk):
                                        0.250 g
                                        0.250 g
       Maximum Acceleration (0-pk):
        Maximum Velocity (0-pk):
                                        0.768 in/s
       Maximum Displacement (pk-pk):
                                        0.012 in
SAFETY PARAMETERS:
    ALARM/ABORTS -
        Active Frequency Range -
```

20.00 Hz

2000.00 Hz

Reference CSL Threshold: 20.00 dB CSL Count Threshold: 5 LOOP CHECK -Noise Threshold: 30.00 mV RMS Frequency: 100.00 Hz Maximum Drive: 100.00 mV RMS Pause after Loop Check: No DRIVE SIGNAL -Maximum Drive: 10.00 Vpeak Attenuated Output Delay: 0.00 Seconds CHANNEL TABLE: Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement Number Type Check (mV/Units) Coupling Type Units Weighting Number Process Yes 1 Control 100.00 Nulled DC Acceler g 0.00 Fundamental No Auxiliary 2 10.00 Nulled DC Acceler g Fundamental No 3 Auxiliary 10.00 Nulled DC Acceler g Fundamental No 4 Auxiliary 10.00 Nulled DC Acceler g Fundamental (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation Number Type Check (mV/Units) Label 1 Label 2 1 CONTROL Control Yes 100.00 2 Auxiliary 10.00 No X AXIS Auxiliary 3 No 10.00 Z AXIS Auxiliary 10.00 No Y AXIS (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Enable H(f) Measurement: H(f) Response Reference Label Pair Channel Channel 1 2 1 2/CONTROL 2 3 1 3/CONTROL 3 4 1 4/ CONTROL DOCUMENTATION: Display Text -Title 1: AMSU PLO S/O 431615,P/N 1348360-1 Title 2: POST Y SINE SWEEP METSAT S/N F03 List Only Text -Title 3: Prompt before Test: Yes Data Storage -Storage Mode: Off Message Log -Log Mode: Off Printing -Automatic Plot: Off REMOTE COMMUNICATION TABLE: Enable Remote Communication: No SHAKER LIMITS: Enable Shaker Limits: No

Yes

Enable for Manual Mode:

End of Sine Test List

		•	
· ·			

#### Section 2B: Vibration - F04

Following is the data taken after acceptance level vibration testing for PLO SN F04.

Test	Expected Value	Post X axis	Post Y axis	Post Z axis
Output Frequency	57.290344 GHz ±	57.290335	57.290336	57.290336
	200 kHz	GHz	GHz	GHz
Output Power	18.5 dBm ± 1.5 dB	19.91	19.93	19.95

Both the frequency span of 100 Hz and the power difference of 0.04 dB are considered to be changes not brought about by vibration stresses, but rather from experimental error.

The following pages contain the raw data further describing the test and the results for the tests on PLO F04.



21 Jan 98

TEST DATA SHEET 8 A
Limited Functional Test (Paragraph 4.2.3)

Test Setup Verified:	5161	Pre-environmental	LPT at	Raam	Tamas
	Signature	Pre-vibration		-	- Emperature
Paragraph 4.2.3.2:					

Paragraph	4.2.3.2	<u>:</u> :
-----------	---------	------------

Step		Test	Required	Measurement	Pass/Fail
3	Potential Difference				
	From	То			:
	Power Supply RTN	Test Platform *	< 1.0 Vac	Notuced	WIDE
	Power Supply RTN	Frequency Counter Chassis	< 1.0 Vac	0.005 VAC	Pays
	Power Supply RTN	Power Meter Chassis	< 1.0 Vac	0.004VAC	Pass

Step	Test	Expected	Measured	Pass/Fail
8	Voltage Meter 1	+15 ± 0.1 V	<u>+15.0</u> ∨	Page
ľ	Voltage Meter 2	-15 ± 0.1 V	<u>~(C, D</u> _V	Parc
ſ	Current Meter 1	600 mA max.		Page
	Current Meter 2	100 mA max. 0002 C+12	<u></u>	Pars
9	Output Frequency	57.290344 GHz ±100 kHz	57, 290 335 35 64	fra
10	Output Power	18.5 dBm ±1.5 dB	19.5 db	Pass

^{*} If used. N/A this line entry if not used in test. Example: If PLO is to be vibrated and unit tested "in-place" after each axis, check potential difference between shaker table and power supply RTN.

Shop Order No.: 431618	Test Engineer: Mh Q Jul
Operation: 0132 Unit Serial No.: FF4	Quality Assurance: A tuli (190) APR 3 98
Date: 4.2.98	Gove Rep Durens 4-3-98

TEST DATA SHEET 8 Limited Functional Test (Paragraph 4.2.3)

Test Setup Verified:_	R. Haigh
	Signature

Paragraph 4.2.3.2:

Step		Test	Required	Measurement	Pass/Fail
3	Potential Difference				
	From	То			<del> </del>
	Power Supply RTN	Test Platform *	< 1.0 Vac		1/1/20
	Power Supply RTN	Frequency Counter Chassis	< 1.0 Vac	·03V	100
	Power Supply RTN	Power Meter Chassis	< 1.0 Vac	.02V	1

Step	Test	Expected	Measured	Pass/Fail
8	Voltage Meter 1	+15 ± 0.1 V	14.77 V	3
·	Voltage Meter 2	-15 ± 0.1 V	~15.03 V	1
	Current Meter 1	600 mA max.	522 mA	35
	Current Meter 2	100 mA max.	57.55 mA	1
9	Output Frequency	57.290344 GHz ±100 kHz	57.2903356HZ	1
10	Output Power	18.5 dBm ±1.5 dB	19.91 dbin	1

* If used. N/A this line entry if not used in test. Example: If PLO is to be vibrated and unit tested "in-place" after each axis, check potential difference between shaker table and power supply RTN.

"X" AX13

Shop Order No.: 43/6/5	Test Engineer: M. Haid
Unit Serial No.: Fo 4	Quality Assurance: $(7A)^{\frac{1}{11}}$ Apr 7 '93
Date: 4/7/98	DCMC: APR 7 98

·					
Step 3	Potential Difference	Test	Required	Measurement	Pass/Fa
J	From	То			<u> </u>
	Power Supply RTN	Test Platform *	< 1.0 Vac		ļ
	Power Supply RTN	Frequency Counter Chassis	< 1.0 Vac		N/
	Power Supply RTN	Power Meter Chassis	< 1.0 Vac	.040	1
	- Constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the constitution of the cons	Tower tyleter chassis	1.0 Vac	,02V	12
Step	Test	Expected	Mea	sured	Pass/Fa
8	Voltage Meter 1	+15 ± 0.1 V	14.9	8_v	10
	Voltage Meter 2	-15 ± 0.1 V	-15.	03 V	P
•	Current Meter 1	600 mA max.	_52	6 mA	10
	Current Meter 2	100 mA max.	57	38 mA	10
	Output Frequency	57.290344 GHz ±100 kHz	57290=	3366HZ	P
9	1				
10	Output Power	18.5 dBm ±1.5 dB	19.93	dbm	P
10	Output Power  N/A this line entry if not us	18.5 dBm ±1.5 dB  sed in test. Example: If PLO is to be a shaker table and power supply R	e vibrated and un	dbm	'after eac
10	Output Power  N/A this line entry if not us ck potential difference between	ed in test. Example: If PLO is to b	e vibrated and un	dbm	'after eac
10	Output Power  N/A this line entry if not us ck potential difference between	ed in test. Example: If PLO is to b	e vibrated and un	dbm	'after eac

		TEST DATA SHEET , Lipited Functional Test (Paragr.			
Т С	V. S. V. 1/2	Ziginee Tunetional Test (Tatagr	apit 4.2.3)		
Test S	etup Verified: Signatu	re			
<b>D</b> .					
Paragr	aph 4.2.3.2:				
Step		Test	Required	Measurement	Pass/Fail
3	Potential Difference				1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
	From	То			
	Power Supply RTN	Test Platform *	< 1.0 Vac		1/14
	Power Supply RTN	Frequency Counter Chassis	< 1.0 Vac	.05V	P
	Power Supply RTN	Power Meter Chassis	< 1.0 Vac	.06V	P
-					
Step	Test	Expected		sured	Pass/Fail
8	Voltage Meter 1	+15 ± 0.1 V		9 <u>9</u> v	P
	Voltage Meter 2	-15 ± 0.1 V	1	<u>3</u> V	P
	Current Meter 1	600 mA max.	_526_mA		P
	Current Meter 2	100 mA max.	_57.3 CmA		P
9	Output Frequency	57.290344 GHz ±100 kHz	57.290336GHZ		P
10	Output Power	18.5 dBm ±1.5 dB	19. % dbm		P
* If used axis, che	l. N/A this line entry if not used to be potential difference between A XIS	ed in test. Example: If PLO is to be not shaker table and power supply R	e vibrated and un	it tested "in-place"	after each

## GENCORP AEROJET

# AZUSA OPERATIONS INTEROFFICE MEMO

TO:

D. R. Pines

**DATE:** 08 - Apr -1998

plovibtest3#279.doc

170:8611:98#279

FROM:

R. J. Heffner

SUBJECT:

AMSU-A Phase Lock Oscillator (PLO) Acceptance Vibration Testing of P/N

1348360-1, S/N's F03 and F04

**COPIES TO:** 

D. F. Brown, R. V. Hauerwaas, L.T. Paliwoda, P. K. Patel, S. W. Reynolds.

D.L. Tran, Writer, File

#### **REFERENCES:**

 "Advanced Microwave Sounding Unit (AMSU-A) Phase Lock Oscillator Qualification/Acceptance Vibration Testing Procedure", Rev. 3, OC-426, March 1998.

- 2. "PLO Assembly", Dwg. 1348360.
- 3. "Receiver Assembly A1-1", Dwg. 1356429.
  - 4. "Shelf Assy, RF, Lower", Dwg. 1331555.
  - 5. "AMSU-A Phase Lock Oscillator (PLO) Acceptance Vibration Testing of P/N 1348360-1, S/N F02", IOM 170:8611:#1291, 9 Dec. 1997.
  - "Advanced Microwave Sounding Unit (AMSU-A) Phase Lock Oscillator, P/N 1348360-1, S/N F03, Mfg. S/O 431615.
  - 7. "Environmental Requirements AMSU-A Instrument Components", AE-26578B, 16 March 1995.
  - 8. "Advanced Microwave Sounding Unit (AMSU-A) Phase Lock Oscillator, P/N 1348360-1, S/N F04, Mfg. S/O 431618.

#### **PURPOSE**

The purpose of this memo is to present a summary of the acceptance level vibration testing performed on the AMSU-A P/N 1348360-1 S/N's F03 and F04 PLO's on April 7, 1998.

#### **SUMMARY**

The AMSU-A P/N 1348360-1 S/N's F03 and F04 PLOs were successfully tested to acceptance level component random vibration loads per the Ref. 1 procedure. Test level was at 13.6 Grms. Before and after each axis of random vibration, low level sine sweeps were run to verify structural integrity of the component assembly. In addition, an electrical functional test

was performed, successfully, after each random vibration test axis. Maximum response of the single triaxial response accelerometer mounted on the PLL/TCXO Assembly occurred for (1) S/N F03 at the METSAT Y-Axis test, with Y-Axis response of 47.303 Grms, and (2) . Maximum peak  $3\sigma$  load, for the METSAT Y-Axis test at  $1^{st}$  f_n of approximately 1026 Hz is estimated a 56.9 g.

#### **RESULTS**

The Ref. 2 S/N F03 instrument was mounted per Ref. 1, Figure 5, "Test Fixture Axis Orientation". Using METSAT orientation, the X-Axis was tested first, with a 0.25 g 20-2000 Hz pre-random sine sweep, the 13.6 Grms random, and a 0.25 g 20-2000 Hz post-random sine sweep all run, followed by an electrical functional test. Subsequently, Z-Axis and Y-Axis test sequences were also run. The same sequence of tests was run for Ref. 2 S/N f04. In all instances the pre-random and post-random sine sweeps showed no changes in the frequency responses before and after the random tests. Of greater significance, each electrical function test, run after each test axis vibration sequence, was successful.

Table 1 summarizes the responses recorded per the control accelerometer and the triaxial response accelerometer for S/N F03. Listed are total Grms responses along with an estimate of the peak 3g response at 1st resonance, determined per half-power point method. Table 2 summarizes the same information for S/N F04.

The results of Table 1 compare to the Ref. 5, Table 1 values. However, there are some differences, which are probably due to (1) different units, and (2) different locations of the response accelerometers (see Ref. 1 and 5). For S/N F01, the response accelerometer was mounted on the +Sun side of the upper PLO assembly (on the PLL assembly). For S/N F02, the response accelerometer was moved to the +Velocity side of the upper PLO (PLL) assembly. The difference in stiffness of the mounts may have contributed to the response differences.

Note that this test continued using #6 mounting screws attaching the unit to the fixture adapter plate (see Ref. 5 discussion).

Table 1 Analysis of S/N F03 Random Vibration Data



X-Axis Test						
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control	13.590					
X-Response	18.456	864	903	0.51	4.46	13.4
Y-Response	10.292	886	931	1.0	6.71	20.1
Z-Response	9.652	886	920	0.21	2.67	8.0

Z-Axis Test					-	
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control	13.533					
X-Response	13.898	1055	1079	1.75	6.48	19.4
Y-Response	7.147	1056	1088	0.72	4.8	14.4
Z-Response	30.320	1035	1068	2.1	8.32	25.0

Y-Axis Test						
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control	13.521					
X-Response	21.303	1027	1054	4.0	10.39	31.2
Y-Response	44.408	1022	1054	6.0	13.86	41.6
Z-Response	10.896	1022	1054	0.49	3.96	11.9

Table 2 Analysis of S/N F04 Random Vibration Data

X-Axis Test						
A	Total	1st fn f(low)	1st fn f(high)	1st Peak Resonance	1st Total Resonance	Estimated Peak g's
Accel. No.	Response Grms	Hz	Hz	g2/Hz	Grms	During Test
Control	13.513					
X-Response	21.552	875	894	0.60	3.38	10.1
Y-Response	11.190	881	914	2.0	8.12	24.4
Z-Response	16.889	891	914	0.11	1.59	4.8

Z-Axis Test							
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Te	
Control	13.552						
X-Response	15.001	1038	1064	1.7	6.65	19.9	
Y-Response	7.591	1041	1064	1.15	5.14	15.4	
Z-Response	31.371	1035	1068	2.05	8.22	24.7	

Y-Axis Test	,					
Accel. No.	Total Response Grms	1st fn f(low) Hz	1st fn f(high) Hz	1st Peak Resonance g2/Hz	1st Total Resonance Grms	Estimated Peak g's During Test
Control X-Response Y-Response Z-Response	13.522 21.257 47.303 6.285	1003 1011 1041	1041 1041 1101	5.2 12 0.13	14.06 18.97 2.79	42.2 56.9 8.4

Figures 1-3 are S/N F03 plots of the in-axis responses for random vibration for the PLO for each of the three test axes. A complete set of vibration data, including all sine sweep data, is included with the Ref. 6 shop order. Figures 4-6 are S/N F04 plots of the in-axis responses for random vibration for the PLO for each of the three test axes. A complete set of vibration data, including all sine sweep data, is included with the Ref. 8 shop order.

### **CONCLUSIONS and RECOMMENDATIONS**

It is concluded that the S/N F03 and S/N F04 P/N 1348360-1 PLO's successfully passed the Ref. 7 AMSU-A Instrument Component Random Vibration Tests.

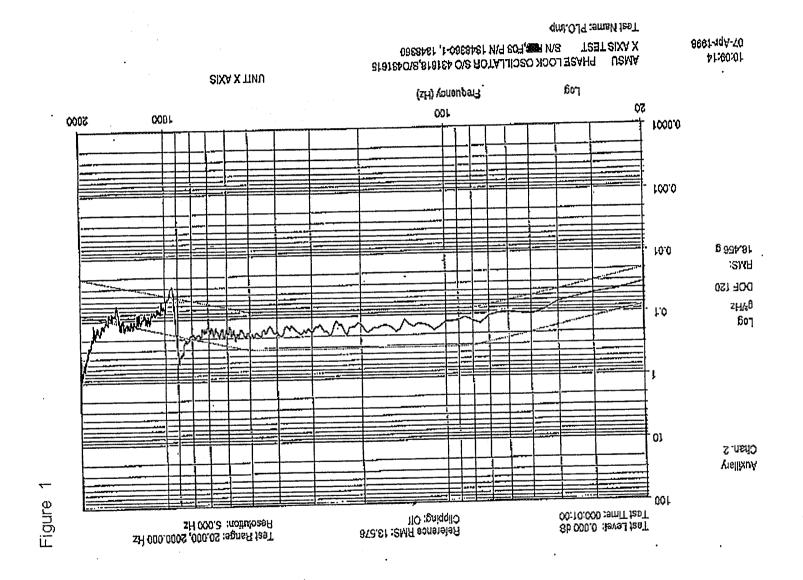
R. J. Heffner

Mechanical Design and Analysis

FILES:

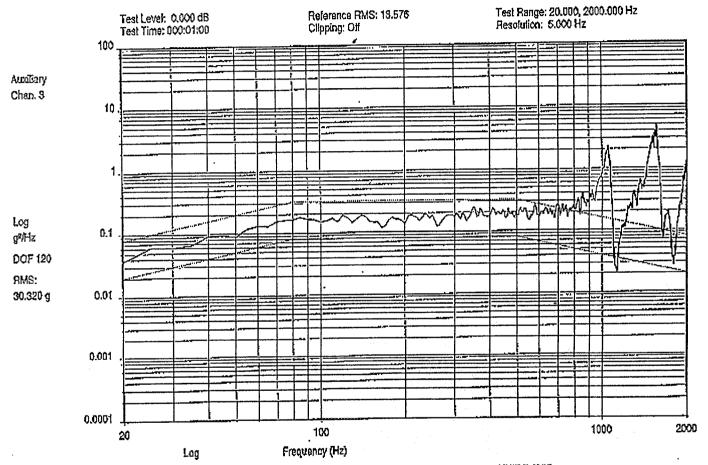
PC

My Documents/amsua2/plovibtest3#274.doc



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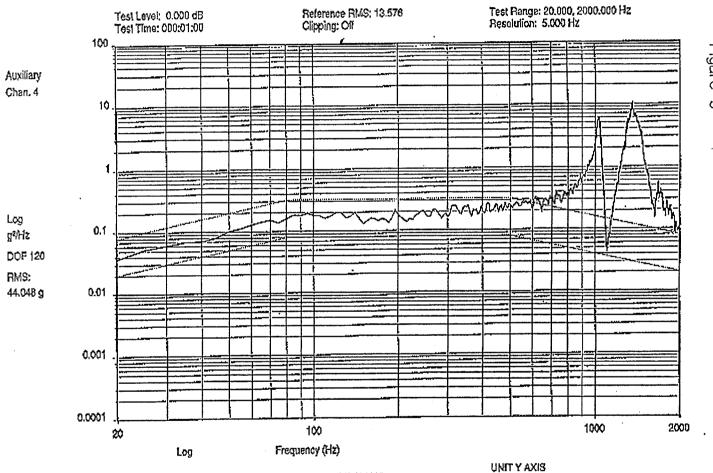


11:27:36 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR S/O 431618,8/O431615 ZAXIS TEST S/N PRPA, FO3 P/N 1349360-1, 1348360 METSAT

Test Name: PLO.imp

UNIT 2 AXIS



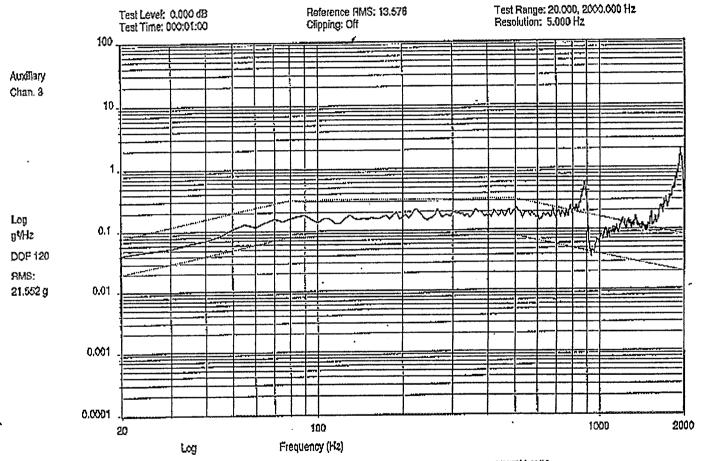


19:18:37 07-Apr-1998

PHASE LOCK OSCILLATOR S/O 431618,S/O431615
TEST S/N 1999,F03, P/N 1348960-1, 1348360 METSAT Y AXIS TEST

Test Name: PLO.Imp

- 98%23279.doc



14:51:02 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR 9/O 491618 X AXIS TEST 8/N F04, P/N 1948960-1 METSAT

Tost Name: PLO.imp

UNIT'X AXIS

Test Range: 20,000, 2000.000 Hz Resolution: 5,000 Hz

1000

UNIT Z AXIS

2000

100

Frequency (Hz)

Reference RMS: 13.576 Clipping: Off

15:44:15 07-Apr-1898 0.0001

20

AMSU PHASE LOCK OSCILLATOR S/O 481618 Z AXIS TEST S/N F04, P/N 1348360-1 METSAT

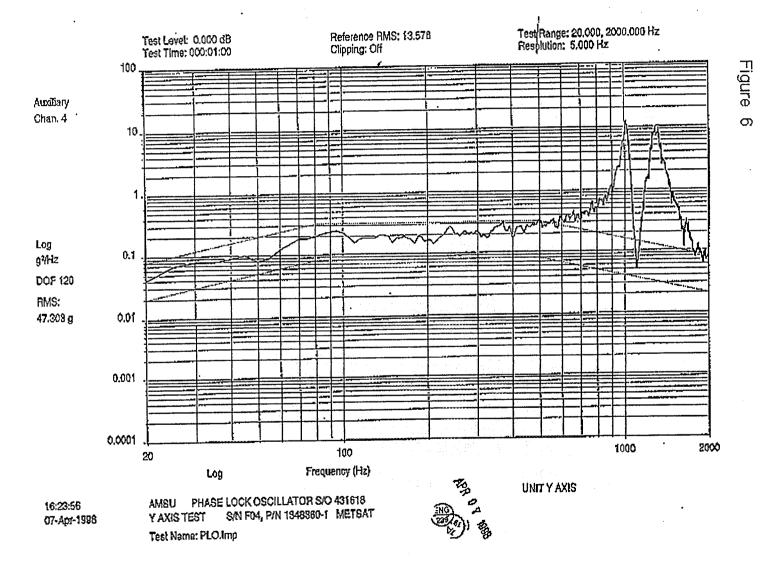
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Log

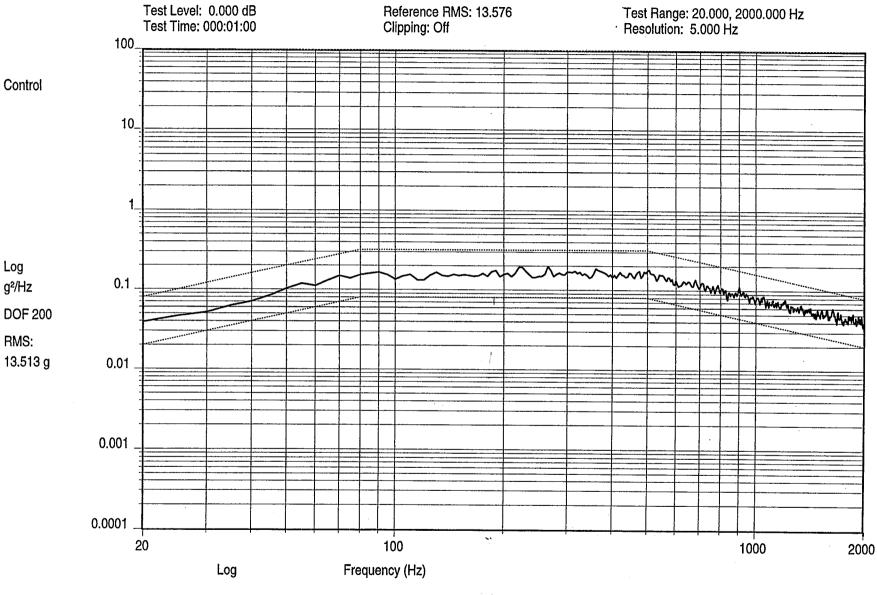
Test Level: 0.000 dB Test Time: 000:01:00

100

9



98%23279.doc

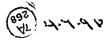


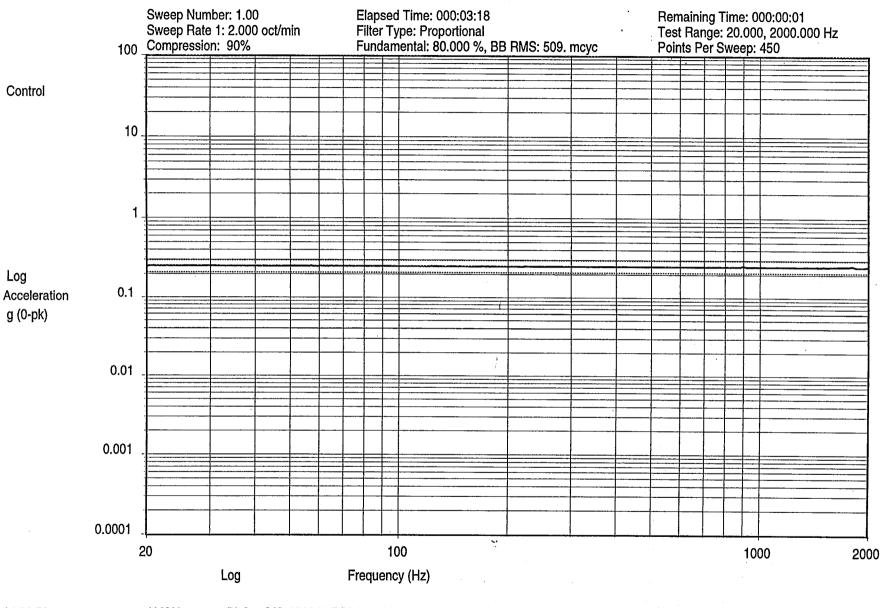
14:50:51 Tue Apr 07 1998 AMSU PHASE LOCK OSCILLATOR S/O 431618
X AXIS SYSTEM CHECKOUT S/N F04, P/N 1348360-1 METSAT

Data Review Name: PLO.tmp



APR 0 7 1998





14:36:58 07-Apr-1998 AMSU

PLO S/O 431618,P/N 1348360-1

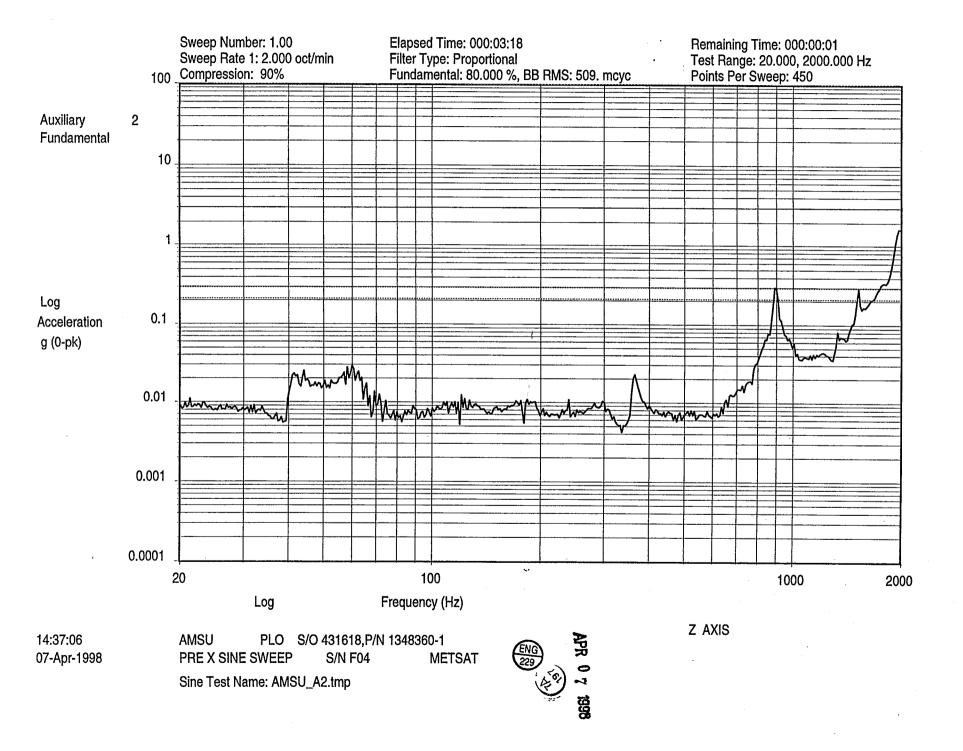
PRE X SINE SWEEP

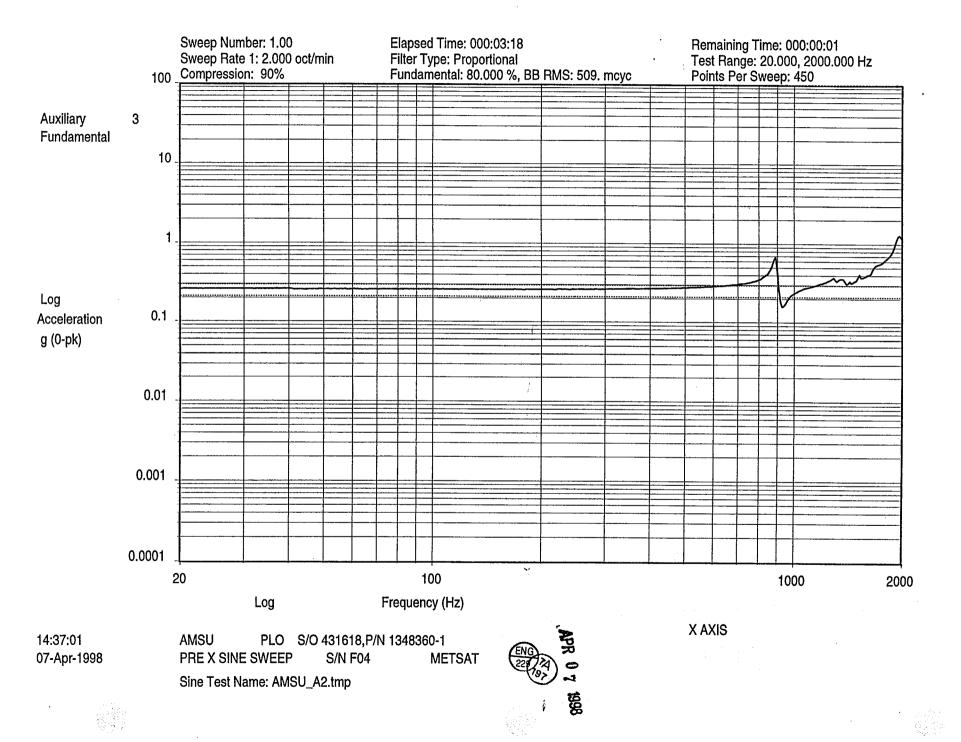
S/N F04

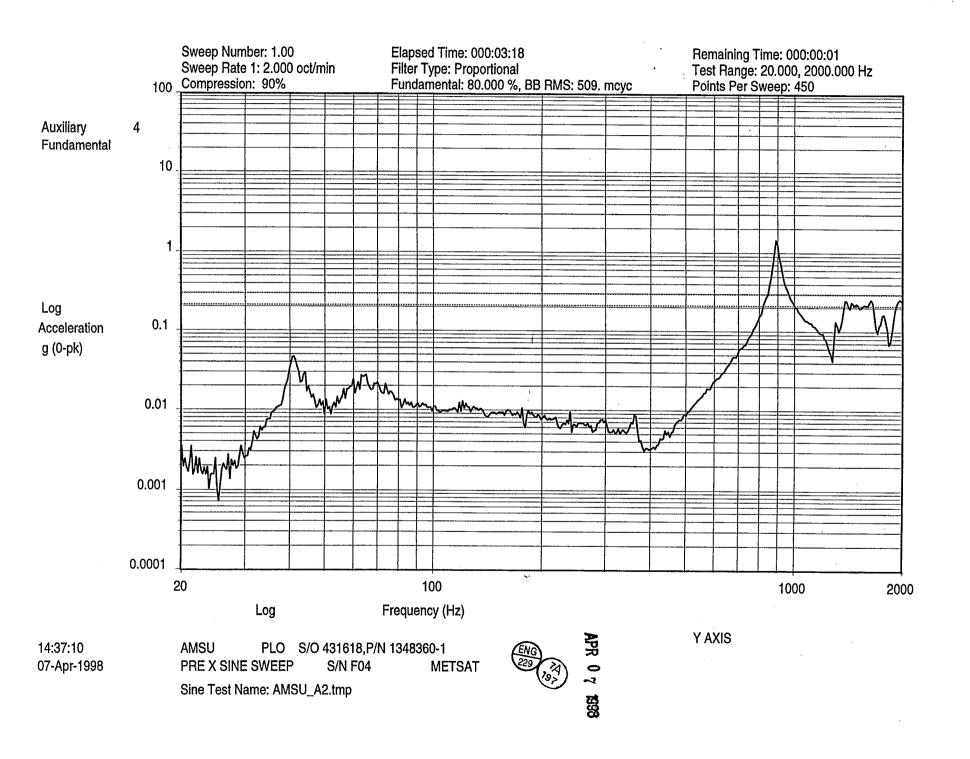
METSAT

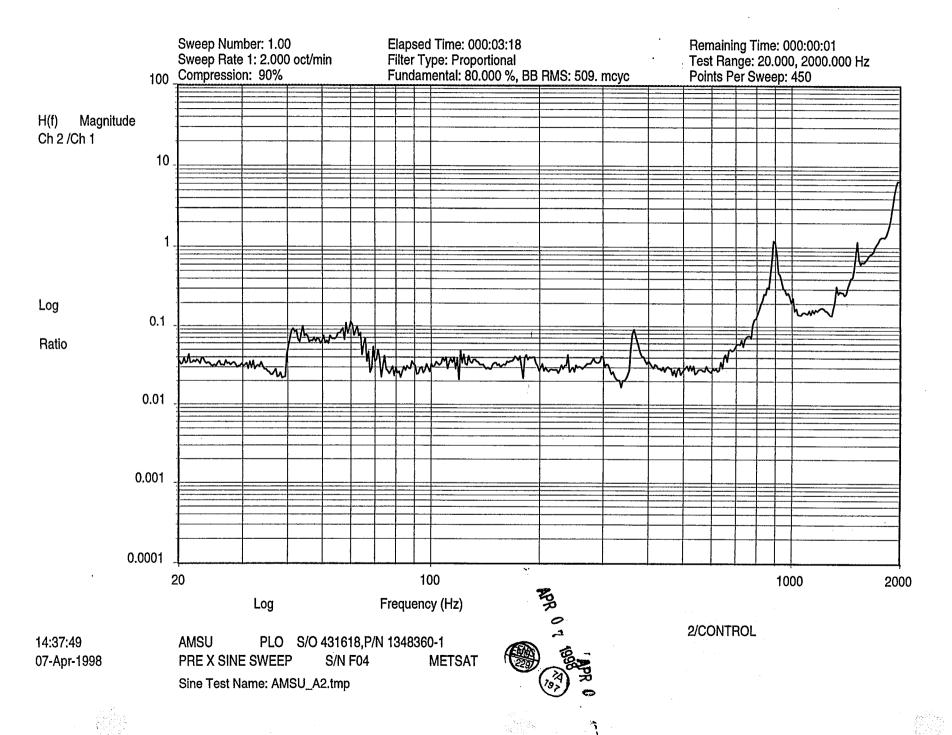
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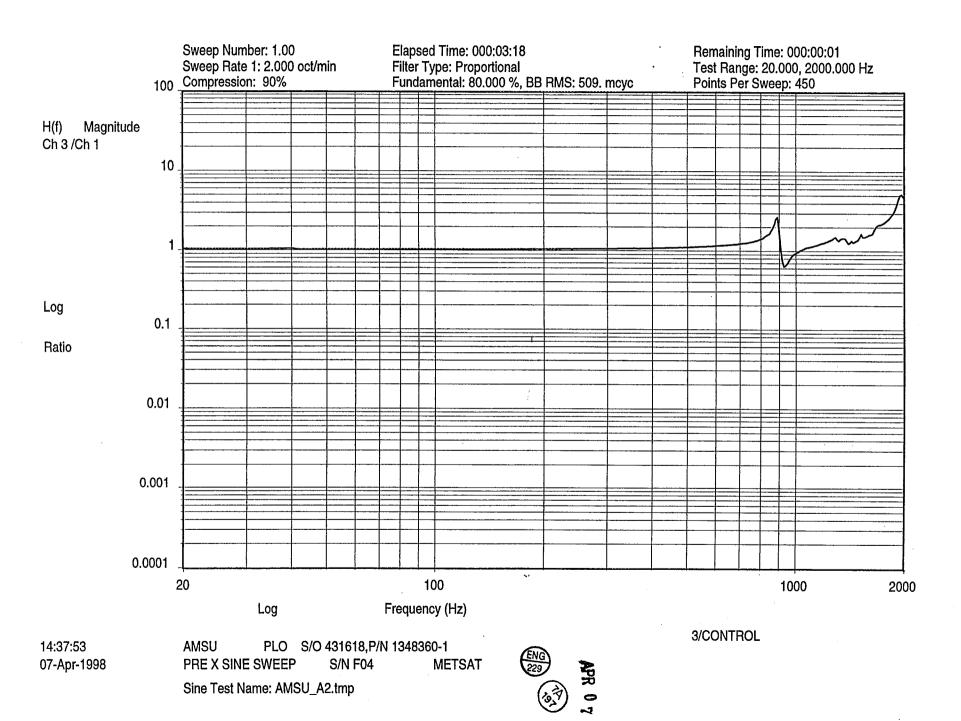


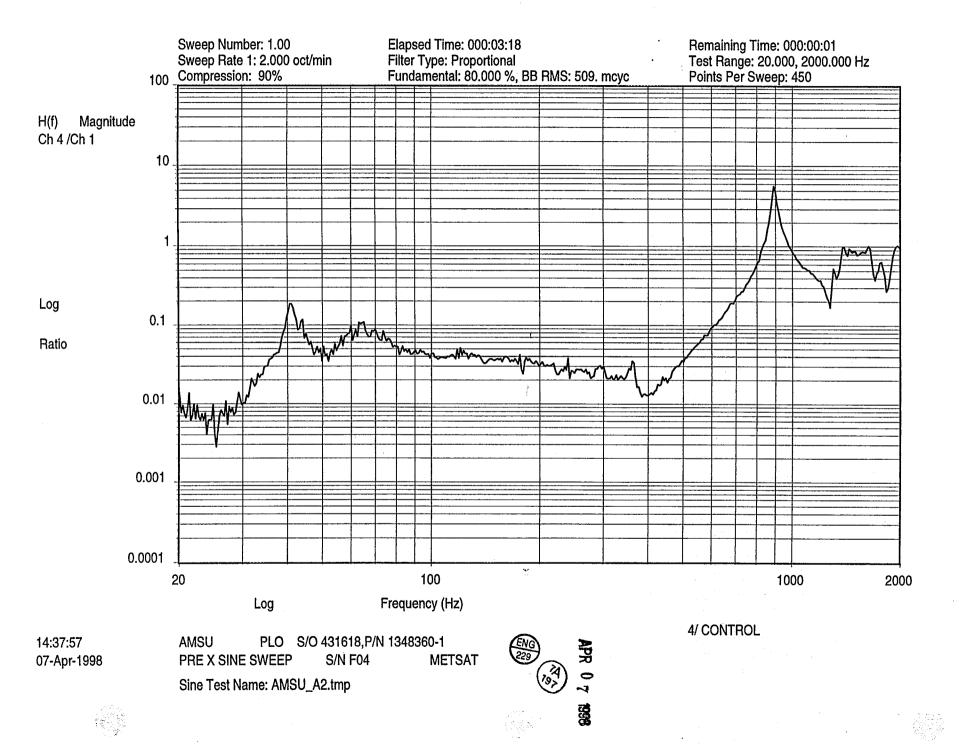












Sine Version 4.6.0 Test File Listing

File Name: AMSU_A2 Current Date: Tue Apr 07 1998 14:28:23 CONTROL PARAMETERS: DURATION -Type: Sweeps Sweeps: 1.00 Test Time (hhh:mm:ss): 000:03:19 CONTROL STRATEGY -Control Spectrum: Average Proportional Filter Type: Filter Specification: Fundamental 80.00 %, RMS 509. mcyc EQUALIZATION -Test Level: 0.00 dB OPERATION MODE -Manual Operation: Enable STARTUP/SHUTDOWN -10.00 dB/sec Startup Rate: Shutdown Rate: 20.00 dB/sec 0.10 dB Level Increment: COMPRESSION PARAMETERS -Manual Override: Enable Record Manual Changes: Disable SWEEP PARAMETERS -Manual Sweep Start: No Sweep Mode: Log Sweep Rate Definition: 100%50%25% 2.0000 Oct/min 1.0000 Oct/min Sweep Rate 1: Sweep Rate 2: 0.5000 Oct/min Sweep Rate 3: Sweep Duration (hhh:mm:ss): 000:03:19 Manual Override: Enable Disable Record Manual Changes: SWEEP/COMPRESSION TABLE -Segment Frequency Rate Compression (Hz) (Oct/min) (%) Number 1 2000 2 90 REFERENCE TABLE: Units for Acceleration, Velocity and Displacement: g, in/s, in Segment Frequency Type Value -Alarm +Alarm -Abort +Abort (Units) (dB) (dB) 0.25 -1.5 1.5 Number (Hz) (dB) (dB) 2000 1 Acceleration 0.25 -20 20 REFERENCE PARAMETERS -Minimum Frequency: 20.000 Hz
Maximum Frequency: 2000.000 Hz
Transducer Crossover: 20.000 Hz
10.000 % 450.. Disable 450.000 Frequency Points: Box Tolerance: IMPORT REFERENCE -Import: Off SPECTRUM DYNAMIC LIMITS -0.000 dB Acceleration Range: Minimum Acceleration (0-pk): 0.250 g Maximum Acceleration (0-pk): 0.250 g
Maximum Velocity (0-pk): 0.768 in/s Maximum Displacement (pk-pk): 0.012 in SAFETY PARAMETERS: ALARM/ABORTS -Active Frequency Range -20.00 Hz Minimum Frequency:

2000.00 Hz

Maximum Frequency:

20.00 dB Reference CSL Threshold: CSL Count Threshold: 5 LOOP CHECK -Noise Threshold: 30.00 mV RMS Frequency: 100.00 Hz Maximum Drive: 100.00 mV RMS Pause after Loop Check: No DRIVE SIGNAL -Maximum Drive: 10.00 Vpeak 0.00 Seconds Attenuated Output Delay: CHANNEL TABLE: Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement Number Type Check (mV/Units) Coupling Type Units Weighting Number Process 1 Control Yes 100.00 Nulled DC Acceler g 0.00 Fundamental 2 Auxiliary 10.00 Nulled DC Acceler g No Fundamental 3 Auxiliary No 10.00 Nulled DC Acceler g Fundamental Auxiliary No 10.00 Nulled DC Acceler g Fundamental (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation Check (mV/Units) Label 1 Yes 100.00 CONTROL Number Type Label 2 1. Control Auxiliary Z AXIS 10.00 No X AXIS No 3 Auxiliary 10.00 Y AXIS 10.00 Auxiliary No 4 (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Enable H(f) Measurement: Yes Response Reference Label H(f) Pair Channel Channel 1 2 1 2/CONTROL 2 3 1 3/CONTROL 1 4/ CONTROL DOCUMENTATION: Display Text -Title 1: AMSU PLO S/O 431618, P/N 1348360-1 Title 2: PRE X SINE SWEEP S/N F04 METSAT List Only Text -Title 3: Prompt before Test: Yes Data Storage -Off Storage Mode: Message Log -Off Log Mode: Printing -Automatic Plot: Off REMOTE COMMUNICATION TABLE: Enable Remote Communication: No SHAKER LIMITS:

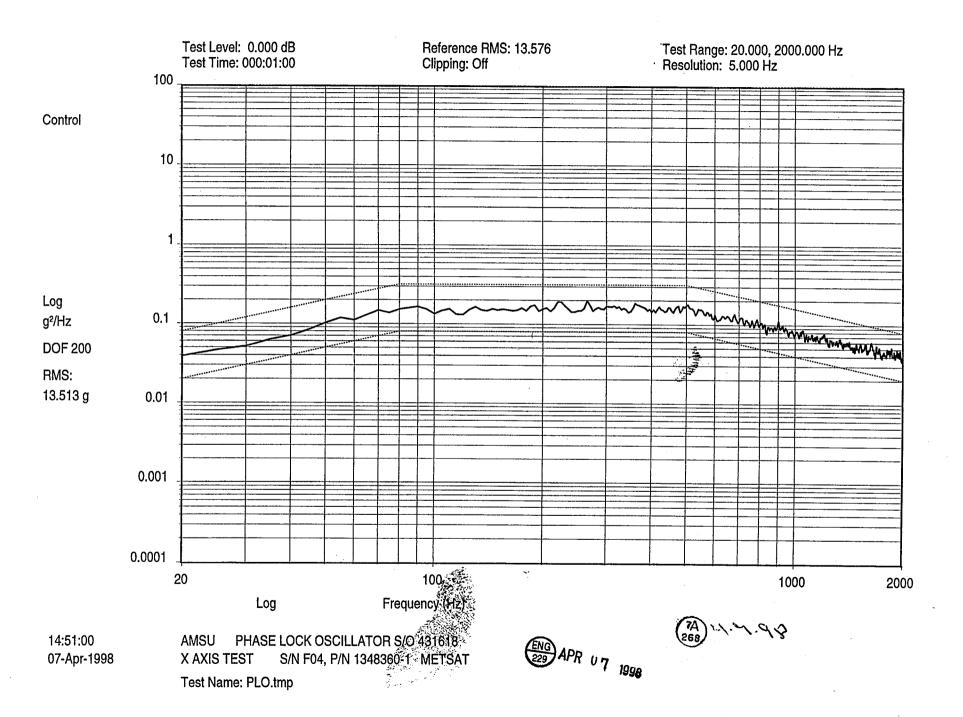
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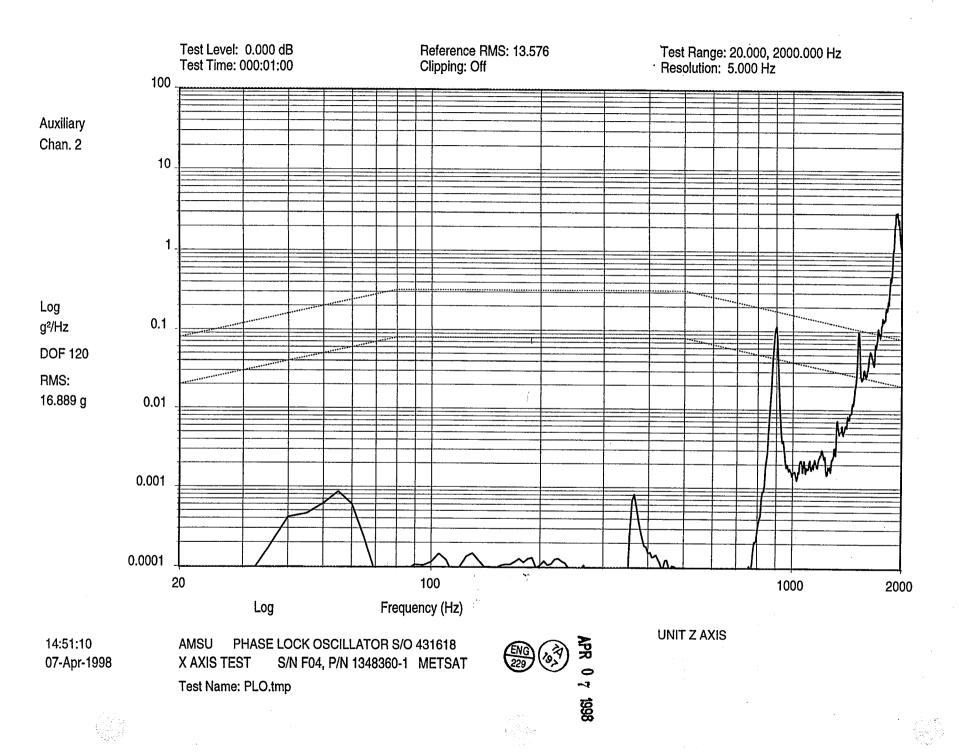
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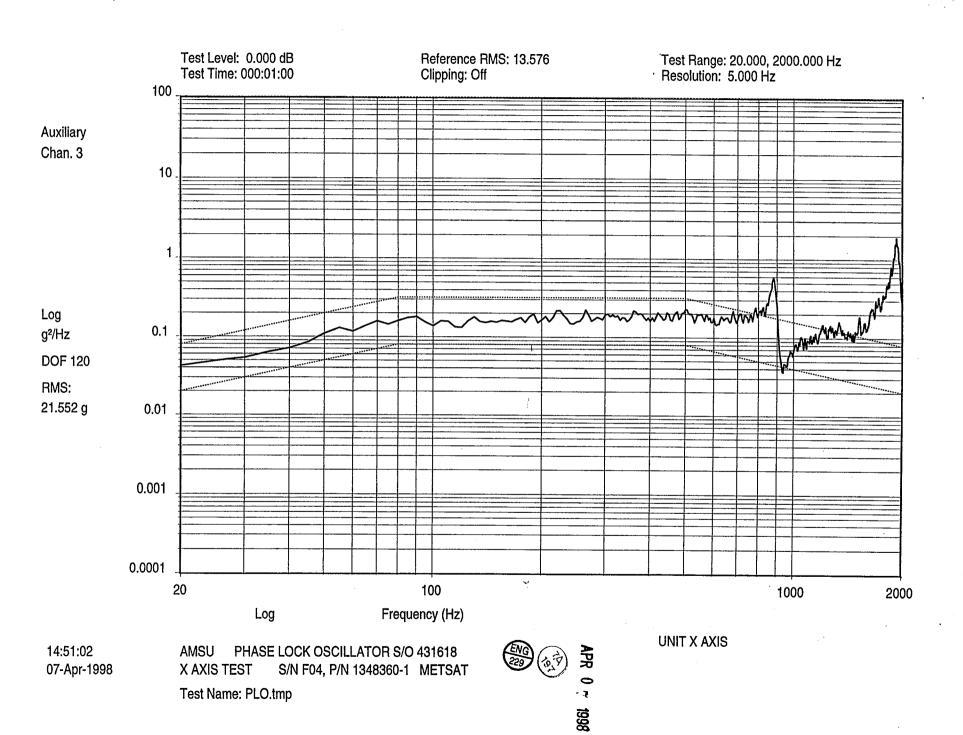
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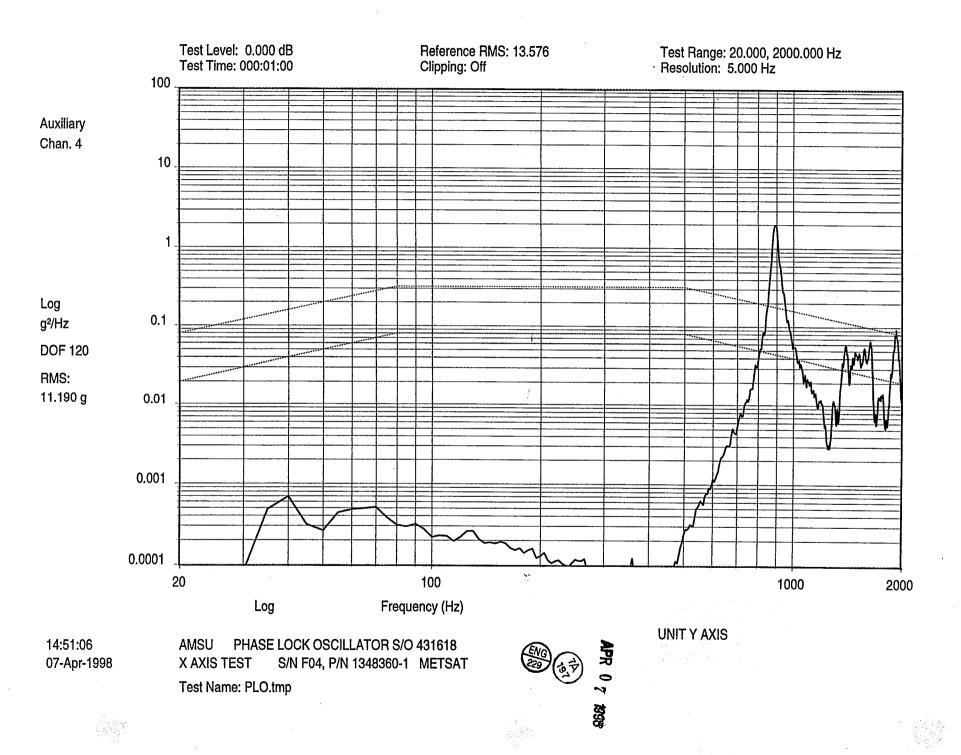
Enable Shaker Limits:

End of Sine Test List









Maximum Drive:

Pause after Loop Check:

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File Name:
                                PLO
Current Date:
                                Tue Apr 07 1998 14:41:17
CONTROL PARAMETERS:
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        Test Time (hhh:mm:ss):
                                   000:01:00
    CONTROL STRATEGY -
       Degrees of Freedom:
                                      200
        Control Spectrum:
                                    Average
        Output Window:
                                   Kaiser-Bessel
    OPERATION MODE -
       Manual Operation:
                                   Enable
    EQUALIZATION -
       Start Level:
                                     -18.0 dB
        Initial Test Level:
                                     -18.0 dB
        Time at Initial Level:
                                     Off
                                      Off
       Prestored Drive:
    STARTUP/SHUTDOWN -
                                       20.0 dB/sec
       Startup Rate:
       Time to Full Level:
                                      60.0 sec
       Level Increment:
                                       2.0 dB
       Reset Measurement Average:
                                    Yes
       Shutdown Rate:
                                       20.0 dB/sec
REFERENCE TABLE:
                                                    +Alarm
   Break
          Frequency
                       Value
                                  Slope
                                           -Alarm
                                                               -Abort
                                                                        +Abort
                                 (dB/oct)
                       (g^2/Hz)
                                                                (dB)
   Point
           (Hz)
                                          (dB)
                                                     (dB)
                                                                         (dB)
                                            -3
                                                     . 3
      1
                                    3
                                                                --6
                                                                          6
       2
               20
                        0.04
       3
               80
                        0.16
             500
       4
                        0.16
      5
             2000
                        0.04
                                    -3
      6
   TEST BANDWIDTH -
                                       20.00 Hz
       Minimum Frequency:
                                    2000.00 Hz
       Maximum Frequency:
       Frequency Lines:
                                    400.00 Lines
       Frequency Resolution:
                                       5.00 Hz
   SPECTRUM DYNAMIC LIMITS -
       Overall RMS:
                                       13.58 g RMS
       Maximum Acceleration (0-pk):
                                       40.73 g
       Maximum Velocity (0-pk):
                                       12.86 in/s
       Maximum Displacement (0-pk):
                                      0.05 in
   IMPORT REFERENCE -
       Import:
                                      Off
SAFETY PARAMETERS:
   ALARM/ABORTS -
                                       21.9 g
       RMS Alarm:
       RMS Abort:
                                       31.0 g
       RMS Abort DOF:
                                       8
                                    Standard
       Control Signal Loss:
   Spectral Lines Allowed Out -
                                      60 Lines
       Alarm Lines:
                                      100 Lines
       Abort Lines:
   Active Conditions -
                                    20.0 Hz
       Minimum Frequency:
                                     2000.0 Hz
       Maximum Frequency:
       Level:
                                      -12.0 dB
       Enable for Manual Operation:
                                      Yes
   LOOP CHECK -
                                      100.0 mV RMS
       Noise Threshold:
```

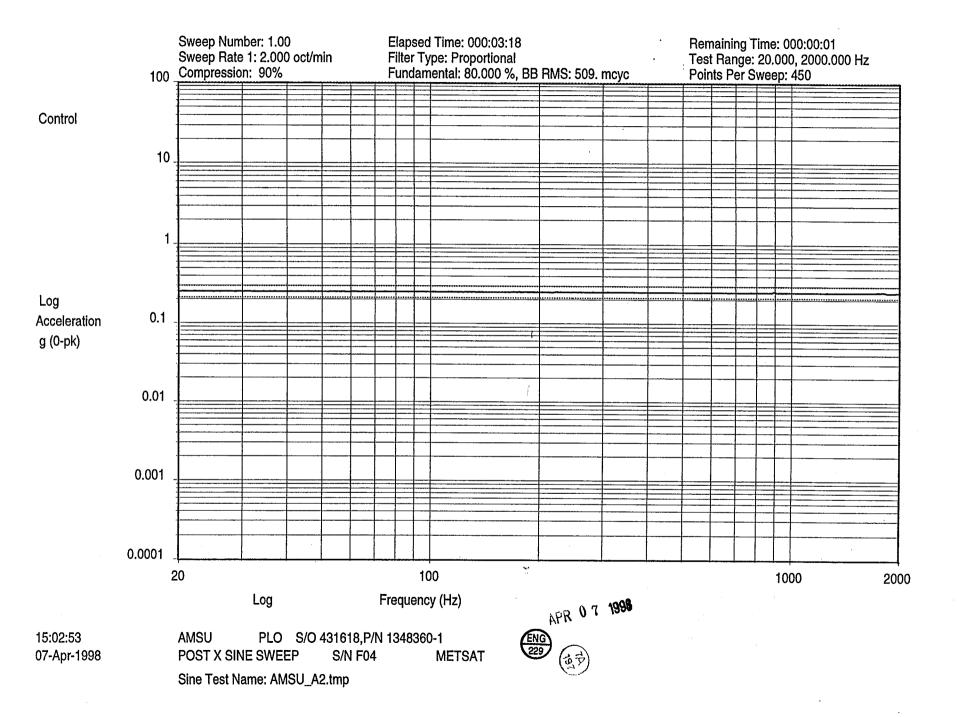
300.0 mV RMS

End of Random Test

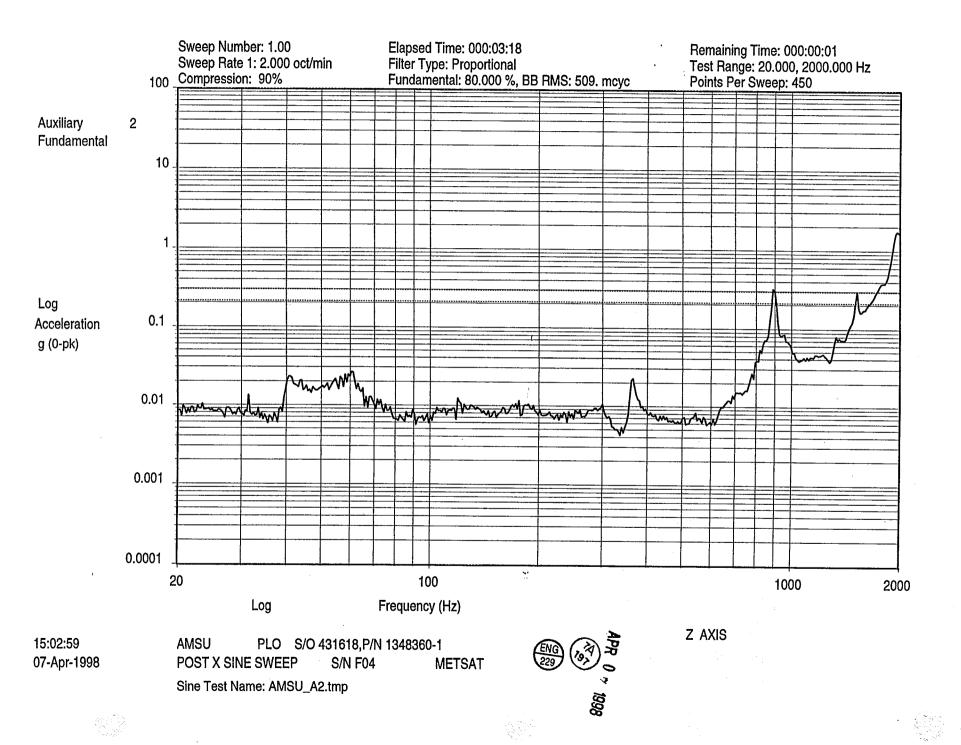
Drive Clipping:

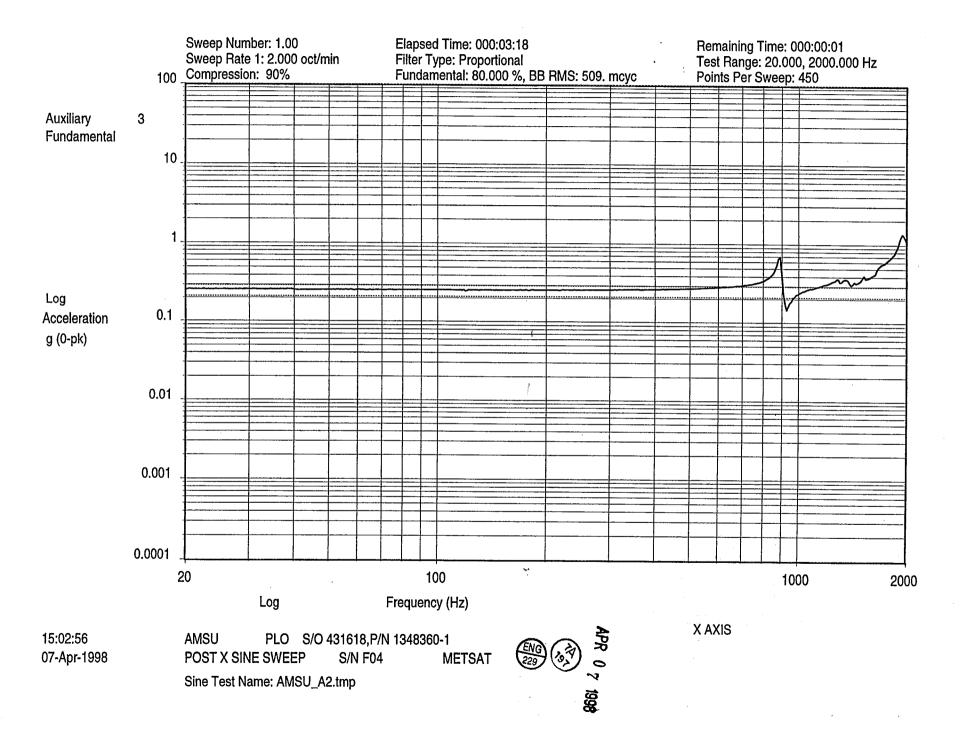
Off

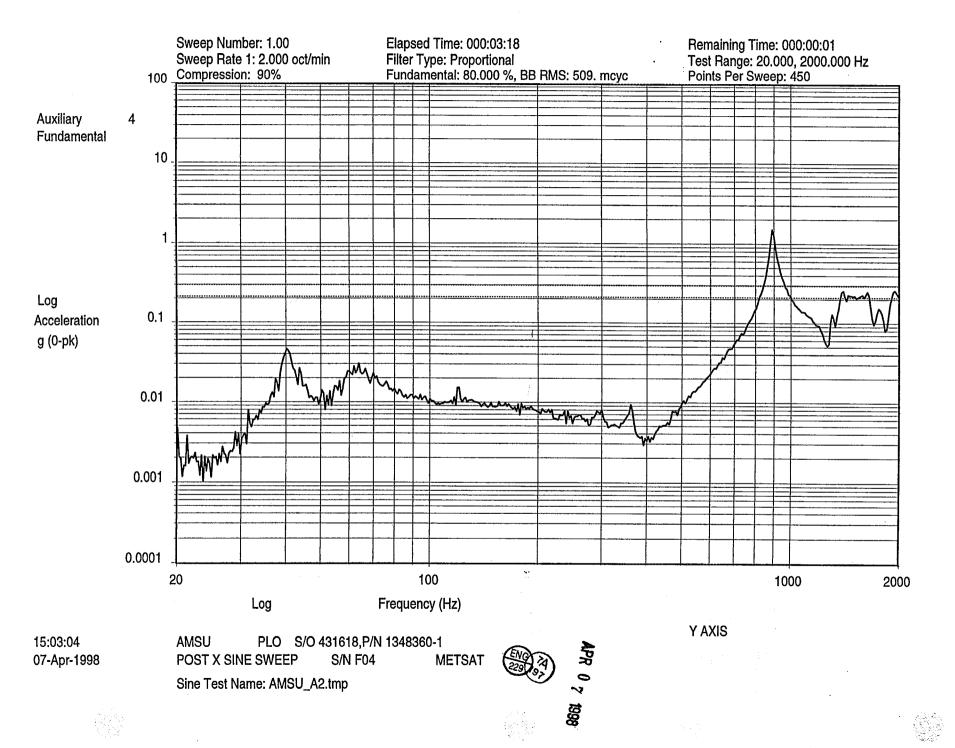
								*	
CHANNEL				_					:
	Channel		Sensitivity				Control		RMS Abc
Number			(mV/Units)				Weighting	Number	(Units
1	Control	Yes	10.00	Null DC		g	0.00		
2	Auxiliary	No	10.00		Acceler	g	•		
3	Auxiliary	No	10.00		Acceler	g			
4	Auxiliary		10.00		Acceler	g			
		Loop	Sensitivity	Channel .	Documenta	tion			
Number	-11-		(mV/Units)				Labe	<b>≘1</b> 2	
1		Yes		CONTROL		•			
2	Auxiliary Auxiliary	NO		UNIT X A					
3				UNIT Z A					
4	Auxiliary		10.00	UNIT Y A	XIS				
(12 In	active Chann	lels)				•			
TRANSFE	R FUNCTION P	מגש מדמי	T.E.						
	ble H(f) Mea			No					
H(f			nce Label	NO					
•	r Channel								
. 1		2	3/CONTI	POT.					
2	_	2	4/CONT						
3		2	5/CONT		-				
	play Text - Title 1: AM Title 2: X	AXIS TE	PHASE LOCK ST S		OR S/O 431 /N 1348360		ETSAT		
List	t Only Text	-							
	Title 3:						<b>5</b> :		
<b>D</b> - 4.	Prompt before	re Test	:	Yes					, , , , , , , , , , , , , , , , , , ,
Data	a Storage -			055					
<b>W</b>	Mode:			Off					
Mess	sage Log - Mode:			Off					
David	mode: nting -			OLL					
PILI	nting - Automatic P	7 - 4		Off					
	Automatic P	TOT:		OFF					
LEVEL SO	CHEDULE:								
	ole Level Sc	hedule:		No					
REMOTE (	COMMUNICATIO	N TABLE	•						
Enal	ole Remote C	ommunica	ation:	No					
<u> </u>									
SHAKER I									
Enak	ole Shaker L	ımıts:		No					

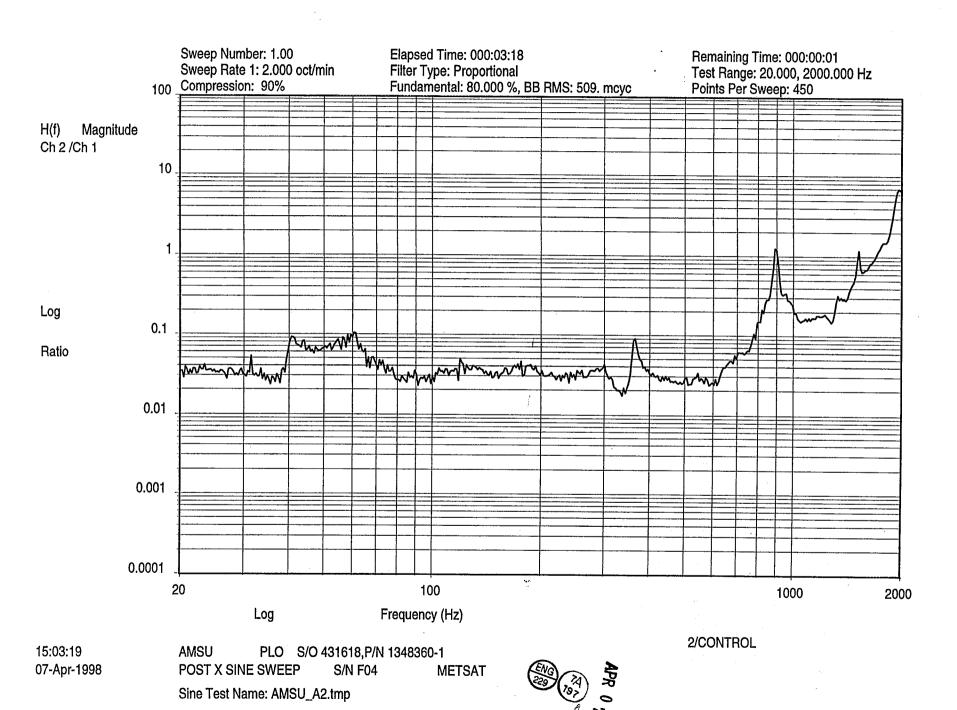


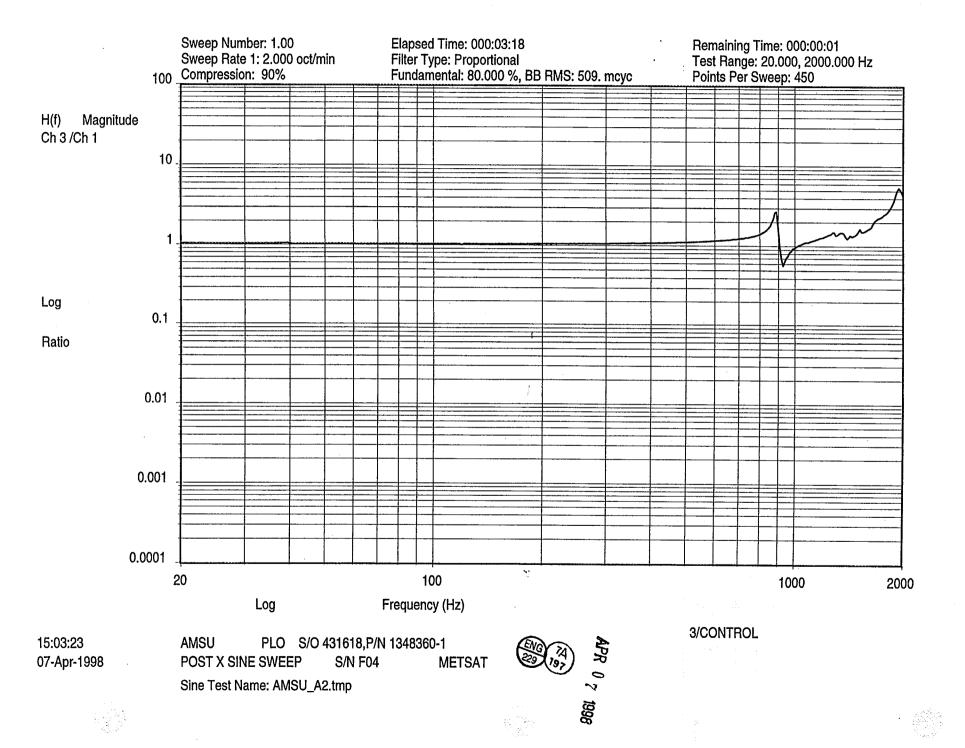
----

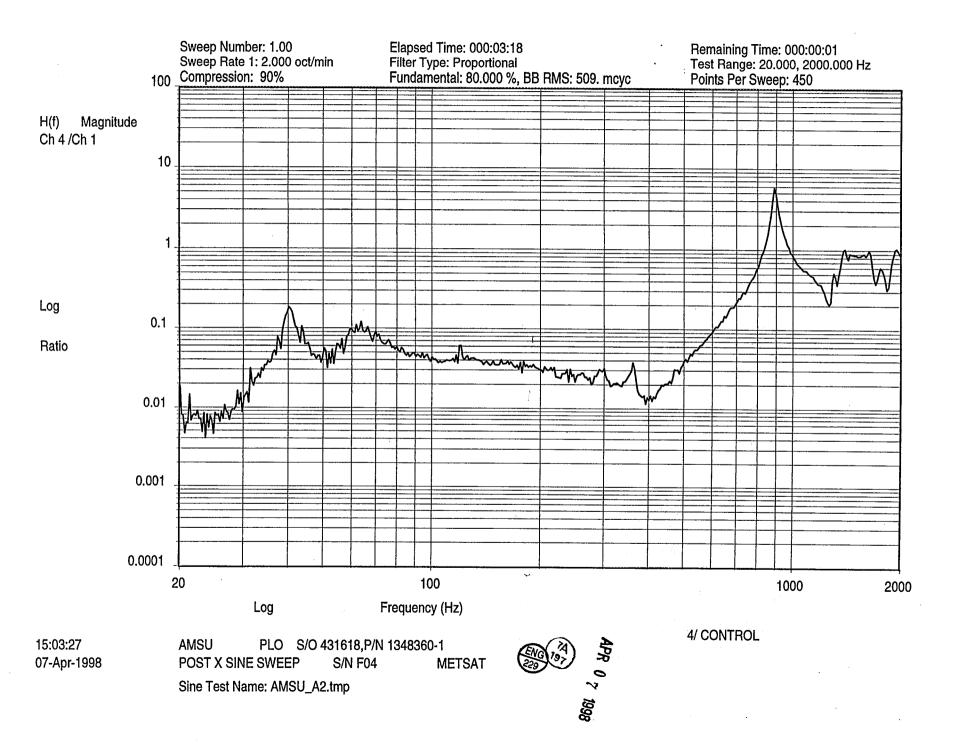












Sine Version 4.6.0 Test File Listing

Minimum Frequency:

Maximum Frequency:

File Name: AMSU_A2 Current Date: Tue Apr 07 1998 15:04:31 CONTROL PARAMETERS: DURATION -Type: Sweeps Sweeps: 1.00 Test Time (hhh:mm:ss): 000:03:19 CONTROL STRATEGY -Control Spectrum: Average Filter Type: Proportional Filter Specification: Fundamental 80.00 %, RMS 509. mcyc EQUALIZATION -0.00 dB Test Level: OPERATION MODE -Manual Operation: Enable STARTUP/SHUTDOWN -10.00 dB/sec Startup Rate: Shutdown Rate: 20.00 dB/sec 0.10 dB Level Increment: COMPRESSION PARAMETERS -Manual Override: Enable Record Manual Changes: Disable SWEEP PARAMETERS -Manual Sweep Start: No Sweep Mode: Loq 100%50%25% Sweep Rate Definition: 2.0000 Oct/min Sweep Rate 1: 1.0000 Oct/min Sweep Rate 2: 0.5000 Oct/min Sweep Rate 3: Sweep Duration (hhh:mm:ss): 000:03:19 Manual Override: Enable Disable Record Manual Changes: SWEEP/COMPRESSION TABLE -Segment Frequency Rate Compression Number (Hz) (Oct/min) (왕) 1 2000 2 90 REFERENCE TABLE: Units for Acceleration, Velocity and Displacement: g, in/s, in Segment Frequency Type Value -Alarm +Alarm -Abort +Abort Number (Hz) (Units) (dB) (dB) (dB) (dB) 1 2000 Acceleration 0.25 -1.51.5 -20 20 REFERENCE PARAMETERS -Minimum Frequency: 20.000 Hz Maximum Frequency: 2000.000 Hz 20.000 Hz Transducer Crossover: 10.000 % Crossover Range: 450.000 Frequency Points: Box Tolerance: Disable IMPORT REFERENCE -Off Import: SPECTRUM DYNAMIC LIMITS -0.000 dB Acceleration Range: 0.250 g Minimum Acceleration (0-pk): Maximum Acceleration (0-pk): 0.250 g Maximum Velocity (0-pk): 0.768 in/s Maximum Displacement (pk-pk): 0.012 in SAFETY PARAMETERS: ALARM/ABORTS -Active Frequency Range -

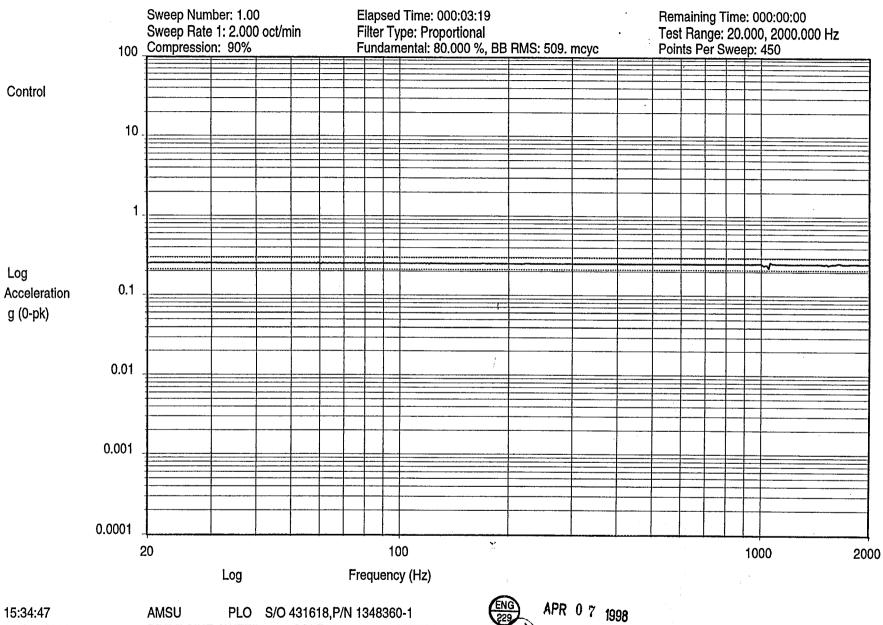
> 20.00 Hz 2000.00 Hz

Enable for Manual Mode: Yes 20.00 dB Reference CSL Threshold: CSL Count Threshold: LOOP CHECK -Noise Threshold: 30.00 mV RMS Frequency: 100.00 Hz Maximum Drive: 100.00 mV RMS Pause after Loop Check: No DRIVE SIGNAL -10.00 Vpeak 0.00 Seconds Maximum Drive: Attenuated Output Delay: CHANNEL TABLE: Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement Number Type Check (mV/Units) Coupling Type Units Weighting Number Process
1 Control Yes 100.00 Nulled DC Acceler g 0.00 Fundamen Fundamenta] Auxiliary No 10.00 Nulled DC Acceler g Auxiliary No 10.00 Nulled DC Acceler g Auxiliary No 10.00 Nulled DC Acceler g Fundamenta] Fundamental Fundamenta] (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation Number Type Check (mV/Units) Label 1 1 Control Yes 100.00 CONTROL Label 2 Auxiliary 2 No 10.00 Z AXIS 10.00 X AXIS 3 Auxiliary No Auxiliary No 10.00 Y AXIS (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Enable H(f) Measurement: Yes H(f) Response Reference Label Channel Channel Pair 1 2 1 2/CONTROL 3 1 2 3/CONTROL 4/ CONTROL 1 DOCUMENTATION: Display Text -Title 1: AMSU PLO S/O 431618,P/N 1348360-1 Title 2: POST X SINE SWEEP S/N F04 METSAT List Only Text -Title 3: Prompt before Test: Yes Data Storage -Storage Mode: Off Message Log -Log Mode: Off Printing -Automatic Plot: Off REMOTE COMMUNICATION TABLE: Enable Remote Communication: No SHAKER LIMITS:

No

Enable Shaker Limits:

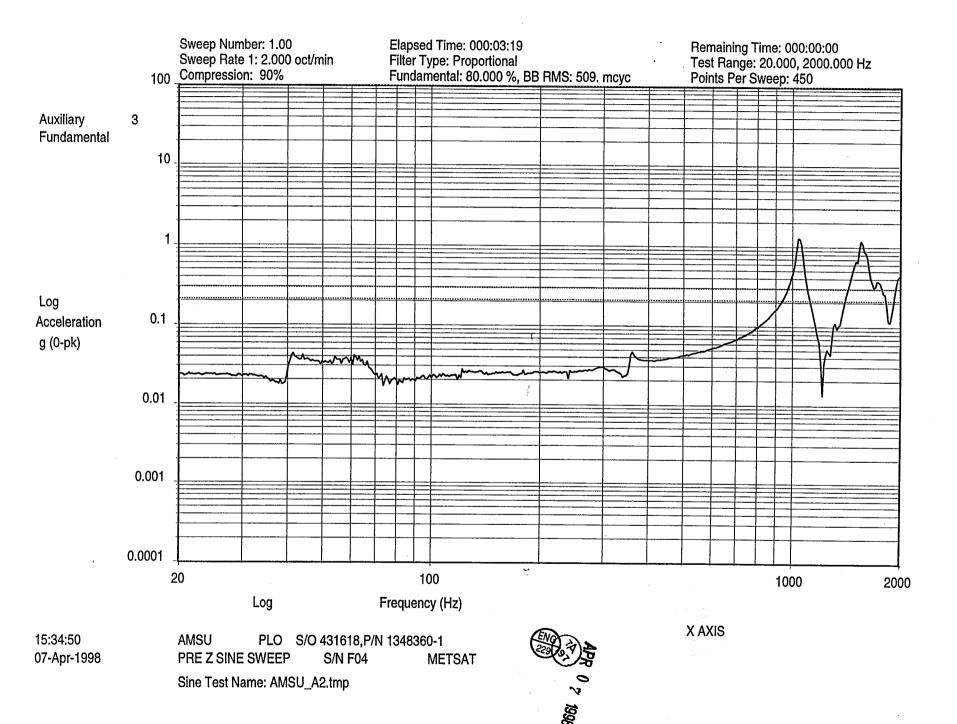
End of Sine Test List

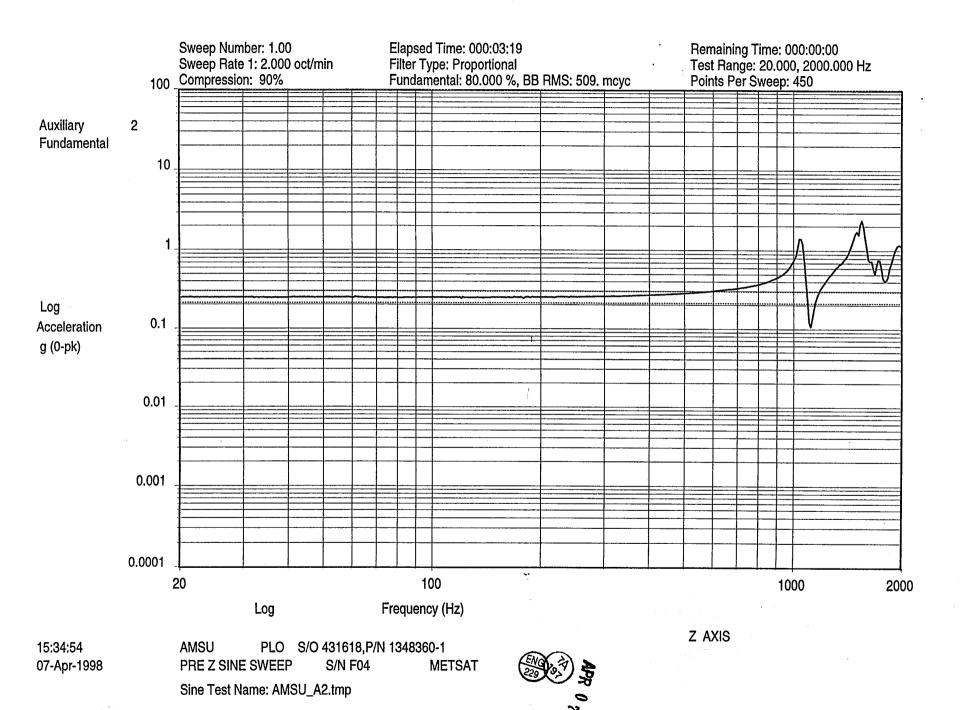


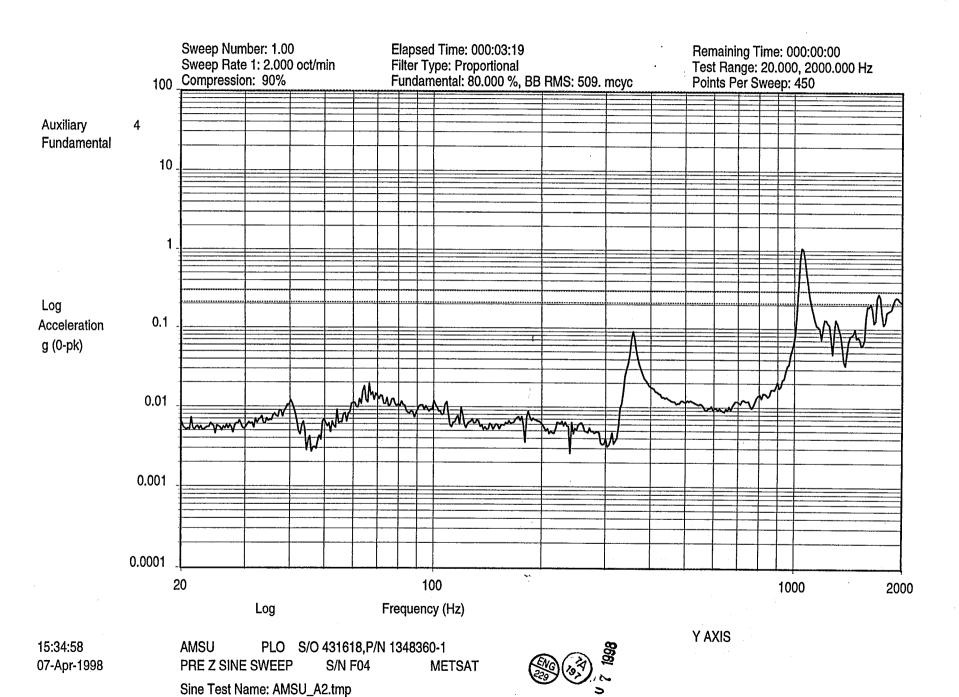
15:34:47 07-Apr-1998 AMSU PLO S/O 431618,P/N 1348360-1 PRE Z SINE SWEEP S/N F04 **METSAT** 

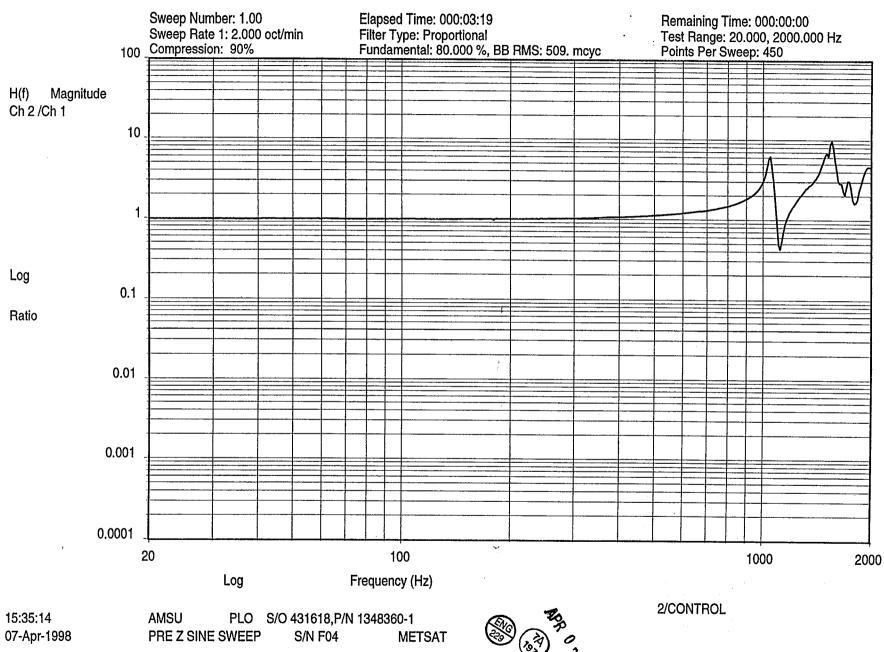
Sine Test Name: AMSU_A2.tmp



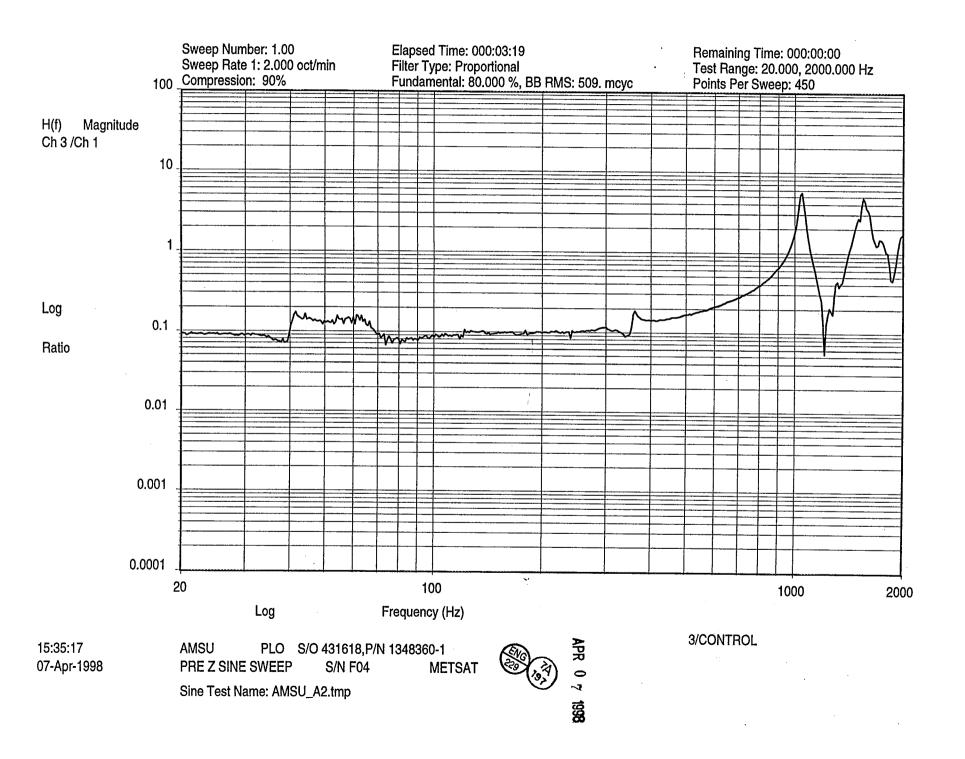


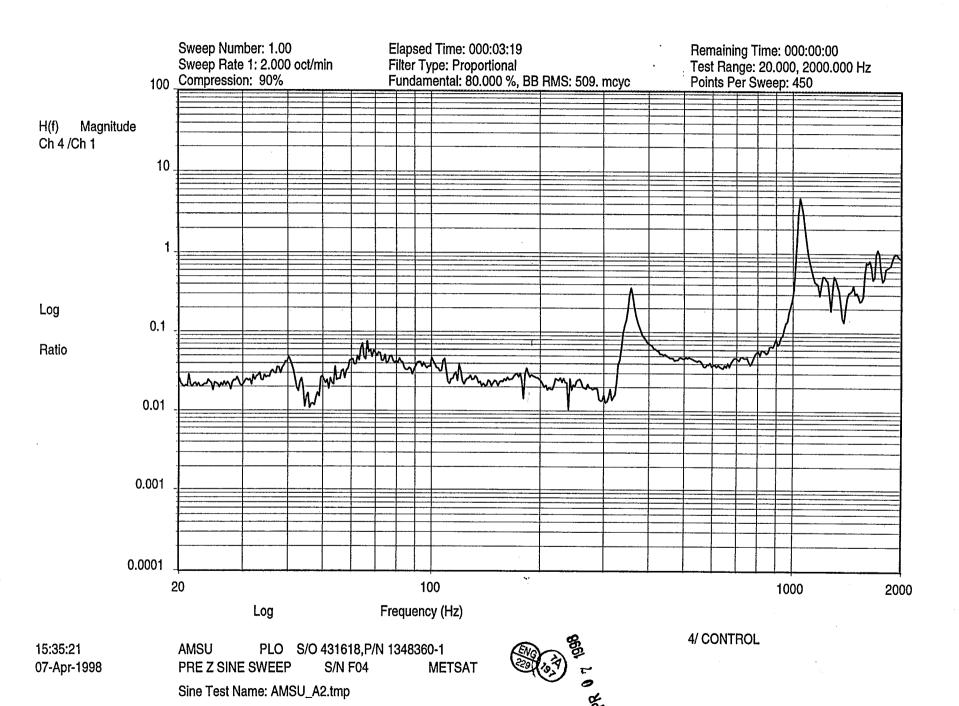






Sine Test Name: AMSU_A2.tmp





Sine Version 4.6.0 Test File Listing

File Name: AMSU A2 Current Date: Tue Apr 07 1998 15:29:46 CONTROL PARAMETERS: DURATION -Type: Sweeps Sweeps: 1.00 Test Time (hhh:mm:ss): 000:03:19 CONTROL STRATEGY -Control Spectrum: Average Filter Type: Proportional Filter Specification: Fundamental 80.00 %, RMS 509. mcyc EQUALIZATION -Test Level: 0.00 dB OPERATION MODE -Manual Operation: Enable STARTUP/SHUTDOWN -Startup Rate: 10.00 dB/sec Shutdown Rate: 20.00 dB/sec Level Increment: 0.10 dB COMPRESSION PARAMETERS -Manual Override: Enable Record Manual Changes: Disable SWEEP PARAMETERS -Manual Sweep Start: No Sweep Mode: Log Sweep Rate Definition: 100%50%25% Sweep Rate 1: 2.0000 Oct/min 1.0000 Oct/min Sweep Rate 2: Sweep Rate 3: 0.5000 Oct/min Sweep Duration (hhh:mm:ss): 000:03:19 Manual Override: Enable Record Manual Changes: Disable SWEEP/COMPRESSION TABLE -Segment Frequency Rate Compression Number (Hz) (Oct/min) (왕) 1 2000 90 REFERENCE TABLE: Units for Acceleration, Velocity and Displacement: g, in/s, in Segment Frequency Type Value -Alarm +Alarm -Abort +Abort Number (Hz) (Units) (dB) (dB) (dB) (dB) -1.51 2000 Acceleration 0.25 1.5 -20 20 REFERENCE PARAMETERS -Minimum Frequency: 20.000 Hz Maximum Frequency: 2000.000 Hz 20.000 Hz Transducer Crossover: 10.000 % Crossover Range: 450.000 Frequency Points: Disable Box Tolerance: IMPORT REFERENCE -Import: Off SPECTRUM DYNAMIC LIMITS -Acceleration Range: 0.000 dB Minimum Acceleration (0-pk): 0.250 g Maximum Acceleration (0-pk): 0.250 g Maximum Velocity (0-pk): 0.768 in/s Maximum Displacement (pk-pk): 0.012 in SAFETY PARAMETERS: ALARM/ABORTS -Active Frequency Range -

20.00 Hz

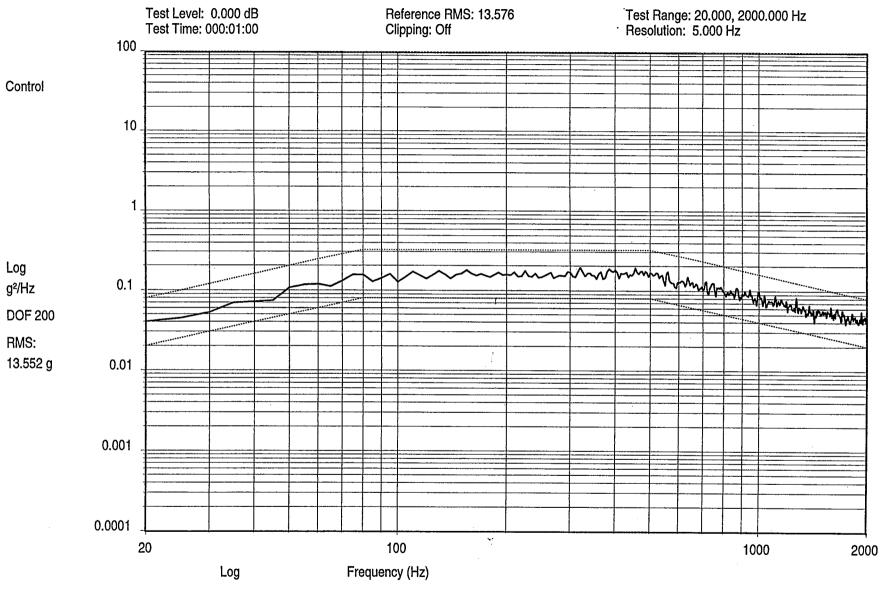
2000.00 Hz

Minimum Frequency:

Maximum Frequency:

	Enable for	Manual	Mode.	Yes				•	
	Reference C			20.00 dB					
	CSL Count Threshold:								
LOOF	CHECK -								\$195x
	Noise Thres	hold:		30.00 mV	RMS				
	Frequency:			100.00 Hz					+ Drawn
	Maximum Dri			100.00 mV	RMS				
	Pause after	. roob (	Check:	No					
	Œ SIGNAL - Maximum Dri	***		10.00 Vpc	na le				
	Attenuated		Delay.	0.00 Vp					
	nic centacea	oucpuc	Delay.	0.00 be	201102				
CHANNEL	TABLE:								•
Channel	Channel		Sensitivity		Transdu	cer	Control	Profile	Measurement
Number	Туре	Check	(mV/Units)				Weighting		
	Control	Yes					0.00		Fundamental
	Auxiliary	No		Nulled DC					Fundamental
	Auxiliary	No	10.00			_			Fundamental
	Auxiliary	No.	10.00	Nulled DC	Acceler	g			Fundamental
	ed for Labe	-	<b>~ !</b> - <b>! ! !</b>	<b>6</b> 1					
Channel Number			Sensitivity		ocumentai	cion	<del>-</del> - 1		
	Control	Yes	(mV/Units) 100.00				Lai	oel 2	
•	Auxiliary		10.00						
	Auxiliary		10.00						
	Auxiliary	No	10.00	Y AXIS			4		
	ctive Chann								
	FUNCTION P.			Yes					
H(f)	Response	Refere	nce Label						
Pair		Chann	ıel	_	******		<b>&gt;</b> :		
1	2	1	2/CONTI						
2	3	1	3/CONTI						
3	4	1	4/ CONT	PROL	•				
DOCUMENT	<b>Δ</b> .Τ.ΟΝ.•				•				
	lay Text -								
_	Title 1: AM	SU	PLO	S/O 43	31618,P/N	J 13483	360-1		
	Title 2: PR			S/N F			METS	SAT	
List	Only Text	<del>-</del>							
	Title 3:								
	Prompt before	re Test	:	Yes					
	Storage -								
Storage Mode:				Off					
	age Log -			0.5.5					
	Log Mode:			Off					
	ting - Automatic P	7 o to o		Off					
•	AULUMALIC P.	106:		OLL					
REMOTE COMMUNICATION TABLE: Enable Remote Communication: No									
Enab	re kemote C	ommunic	acion:	No					
SHAKER L	IMITS:								
	le Shaker L	imits:		No					
				-					

End of Sine Test List

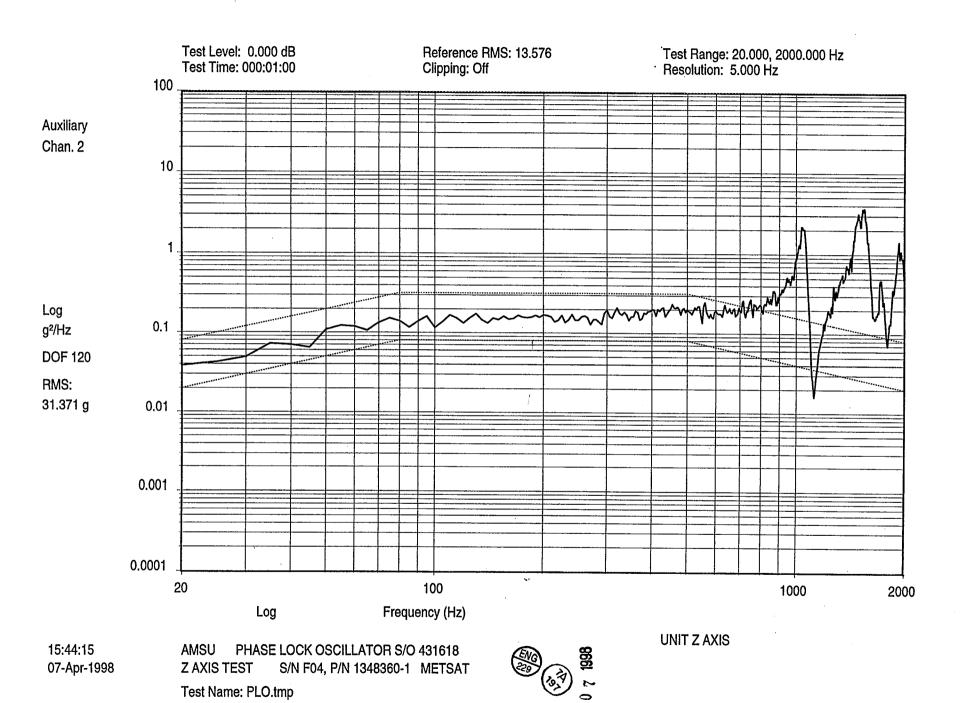


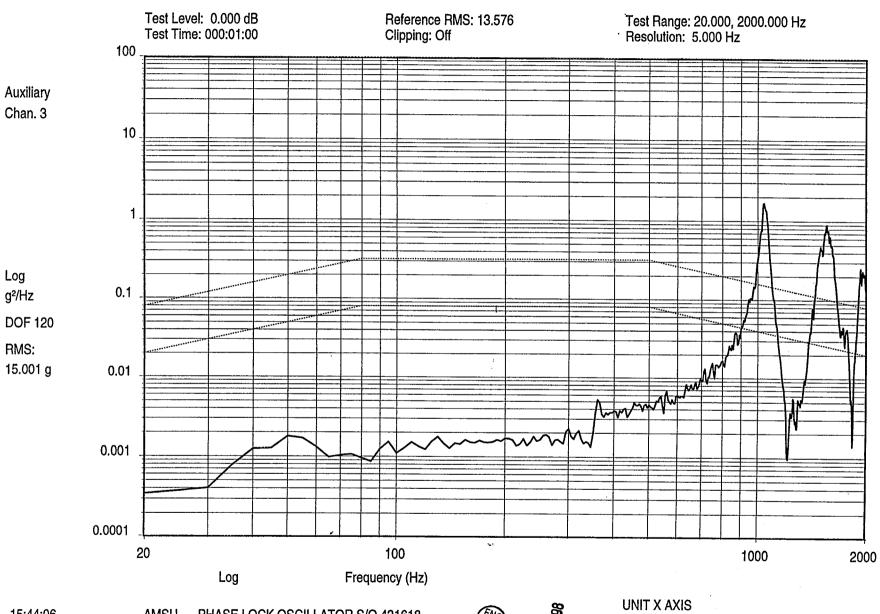
15:44:03 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR S/O 431618 Z AXIS TEST S/N F04, P/N 1348360-1 METSAT

Test Name: PLO.tmp



APR 07 1999

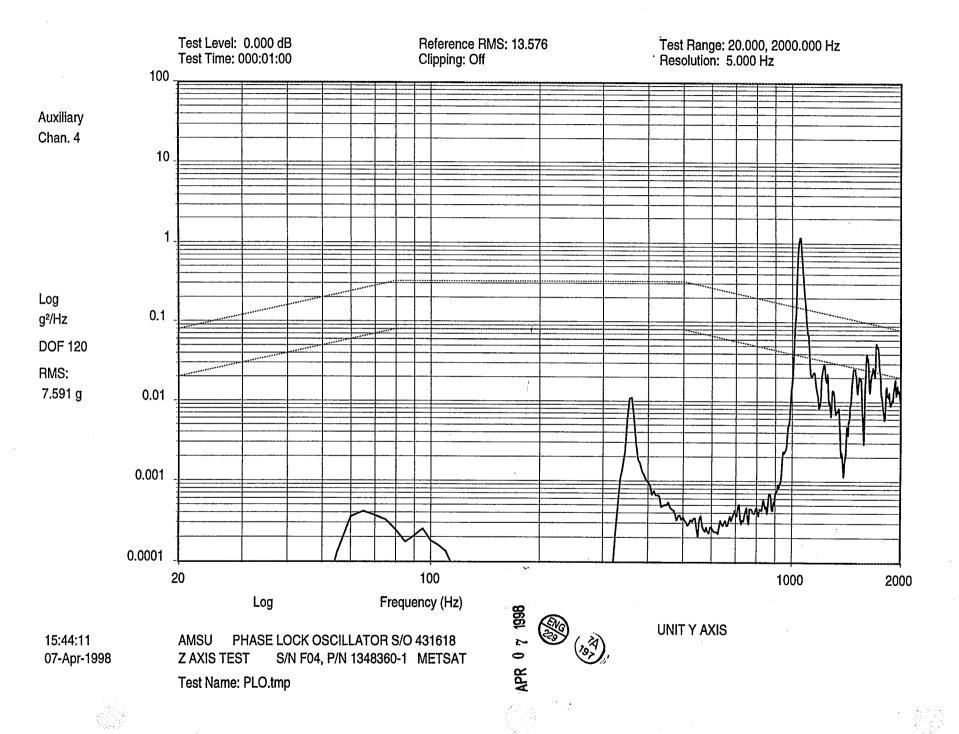




15:44:06 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR S/O 431618 Z AXIS TEST S/N F04, P/N 1348360-1 METSAT

Test Name: PLO.tmp





Pause after Loop Check:

```
File Name:
                                 PLO
Current Date:
                                 Tue Apr 07 1998 15:38:29
CONTROL PARAMETERS:
    DURATION -
        Test Time (hhh:mm:ss):
                                     000:01:00
    CONTROL STRATEGY -
        Degrees of Freedom:
                                      200
        Control Spectrum:
                                     Average
        Output Window:
                                     Kaiser-Bessel
    OPERATION MODE -
        Manual Operation:
                                    Enable
    EQUALIZATION -
        Start Level:
                                      -18.0 dB
        Initial Test Level:
                                       -18.0 dB
        Time at Initial Level:
                                       Off
        Prestored Drive:
                                       Off
    STARTUP/SHUTDOWN -
        Startup Rate:
                                        20.0 dB/sec
        Time to Full Level:
                                       60.0 sec
        Level Increment:
                                        2.0 dB
        Reset Measurement Average:
                                     Yes
        Shutdown Rate:
                                        20.0 dB/sec
REFERENCE TABLE:
    Break Frequency
                        Value
                                   Slope
                                            -Alarm
                                                     +Alarm
                                                                -Abort
                                                                         +Abort
    Point
            (Hz)
                        (g^2/Hz)
                                  (dB/oct)
                                           (dB)
                                                      (dB)
                                                                (dB)
                                                                          (dB)
       1
                                     3
                                             -3
                                                       3
                                                                 -6
                                                                           6
                20
                         0.04
       3 .
               80
                         0.16
       4
              500
                         0.16
       5
              2000
                         0.04
       6
                                     -3
    TEST BANDWIDTH -
        Minimum Frequency:
                                        20.00 Hz
        Maximum Frequency:
                                      2000.00 Hz
        Frequency Lines:
                                      400.00 Lines
        Frequency Resolution:
                                        5.00 Hz
    SPECTRUM DYNAMIC LIMITS -
        Overall RMS:
                                       13.58 g RMS
        Maximum Acceleration (0-pk):
                                       40.73 g
                                      12.86 in/s
        Maximum Velocity (0-pk):
        Maximum Displacement (0-pk):
                                        0.05 in
    IMPORT REFERENCE -
        Import:
                                       Off
SAFETY PARAMETERS:
   ALARM/ABORTS -
       RMS Alarm:
                                        21.9 g
        RMS Abort:
                                        31.0 g
       RMS Abort DOF:
                                        8
        Control Signal Loss:
                                     Standard
   Spectral Lines Allowed Out -
       Alarm Lines:
                                        60 Lines
        Abort Lines:
                                      100 Lines
   Active Conditions -
                                       20.0 Hz
       Minimum Frequency:
                                     2000.0 Hz
       Maximum Frequency:
       Level:
                                      -12.0 dB
       Enable for Manual Operation:
                                      Yes
   LOOP CHECK -
       Noise Threshold:
                                      100.0 mV RMS
                                       300.0 mV RMS
       Maximum Drive:
```

No

	Drive Clip	oing:		Off					
CHANI	NEL TABLE:							*	
Chann	nel Channel	Loop	Sensitivity	Input	Transduce	r	Control	Profile	PMC AL
Numbe	•		(mV/Units)				Weighting	Number	(Unit
1	Control	Yes	10.00	Null DC		g	0.00	иштет	(OIIIC
2	Auxiliary	No	10.00	Null DC		g			
3	Auxiliary	No	10.00	Null DC		g			
4	Auxiliary	No	10.00	Null DC		g G			
Chanr	nel Channel	Loop	Sensitivity					•	
Numbe	er Type		(mV/Units)				Labe	.1 2	
1	Control	Yes	10.00	CONTROL			· LUCLD	- L	
2	Auxiliary			UNIT Z AX	KTS				
3	Auxiliary			UNIT X AX					
4	Auxiliary		10.00	UNIT Y AX					
(12	Inactive Chann								
		,							
TRANS	SFER FUNCTION F	PAIR TABI	LE:	-					
	Enable H(f) Mea			No					
	I(f) Response								
E	Pair Channel								
	. 1 3	2	3/CONTF	ROL					
	2 [.] 4	2	4/CONTF						
	3 5	2	5/CONTF	-					
DOCUM	MENTATION								
Γ	Display Text -								
	Title 1: AM	ISU	PHASE LOCK	OSCILLATO	R S/O 431	618			
	Title 2: Z				N 1348360		TSAT		
· I	ist Only Text								
	Title 3:				man, and		<b>3</b> ·		
	Prompt befo	re Test:	,	Yes					
D	ata Storage -								
	Mode:			Off					
M	lessage Log -								
	Mode:			Off					

Off

LEVEL SCHEDULE:

Printing -

Enable Level Schedule: No

REMOTE COMMUNICATION TABLE:

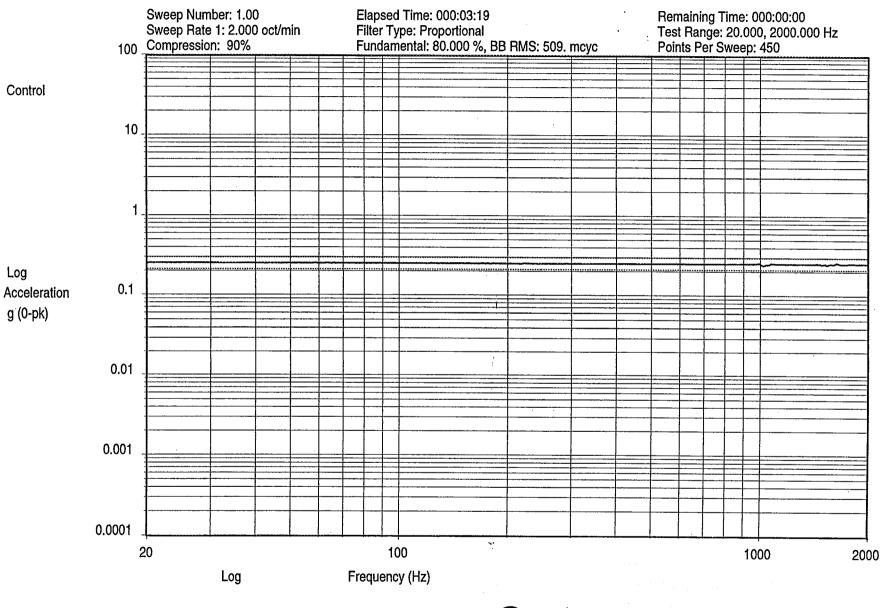
Automatic Plot:

Enable Remote Communication: No

SHAKER LIMITS:

Enable Shaker Limits: No

End of Random Test



15:52:41 07-Apr-1998 **AMSU** 

PLO S/O 431618,P/N 1348360-1

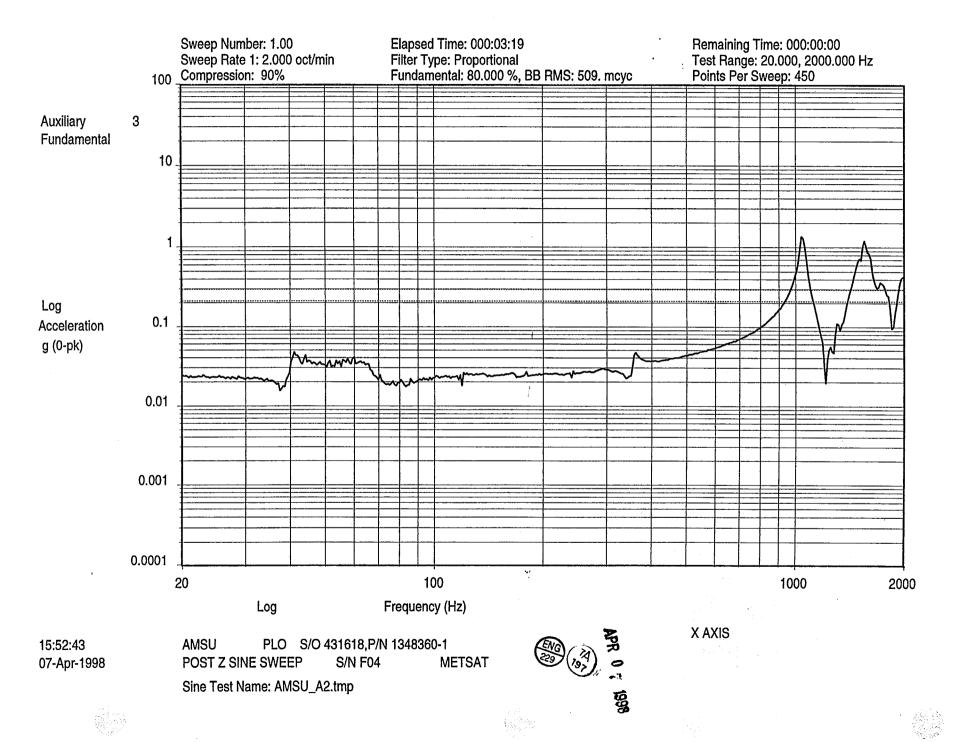
POST Z SINE SWEEP

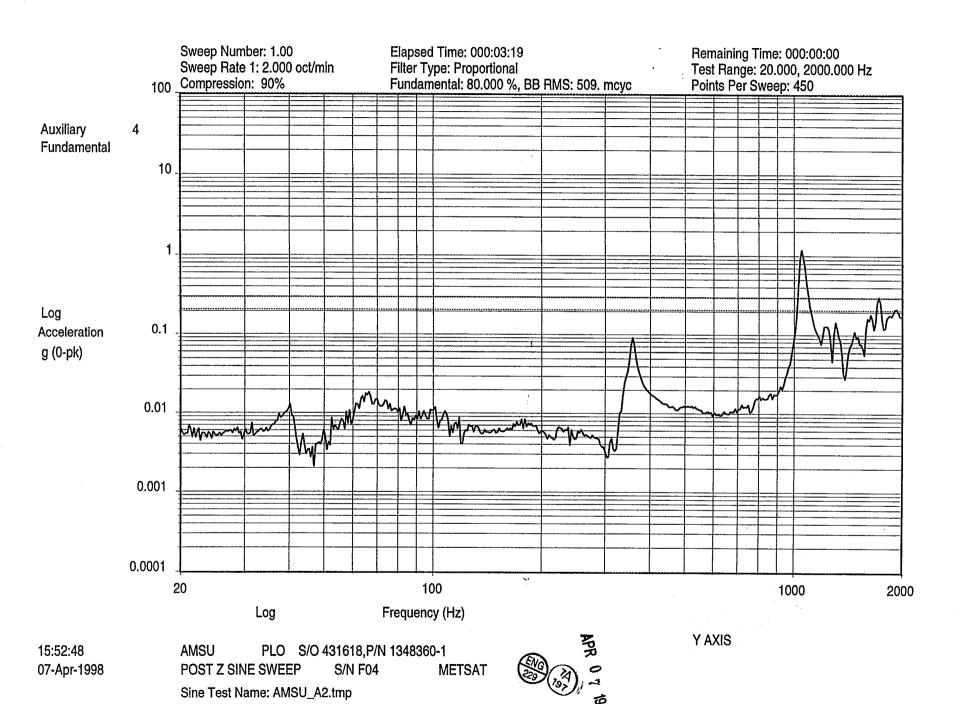
S/N F04

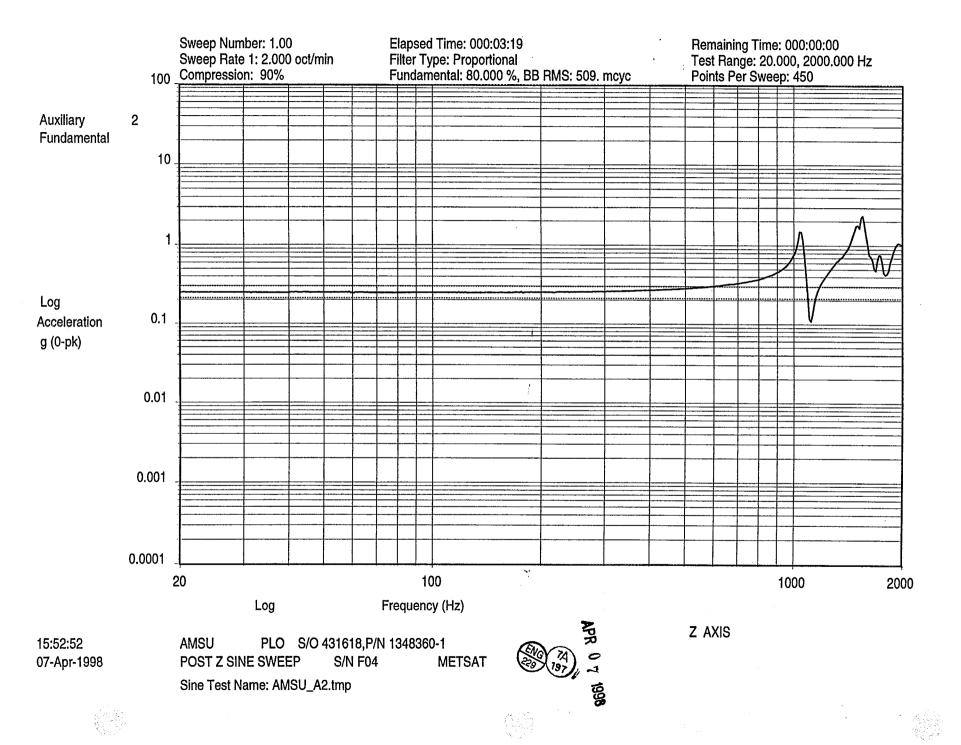
**METSAT** 

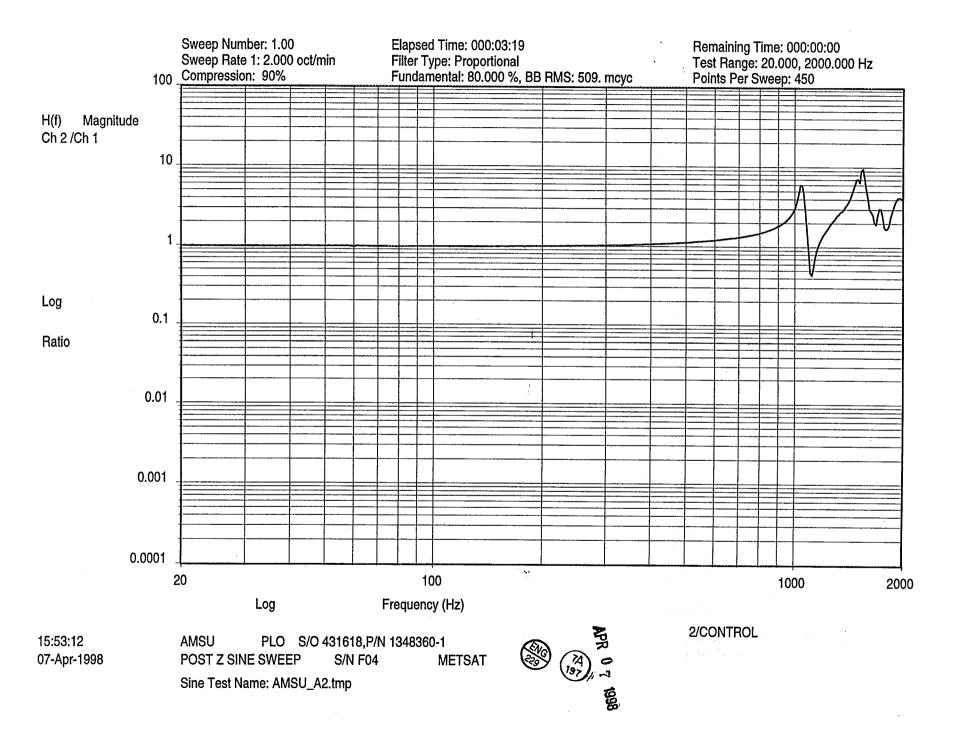
Sine Test Name: AMSU_A2.tmp

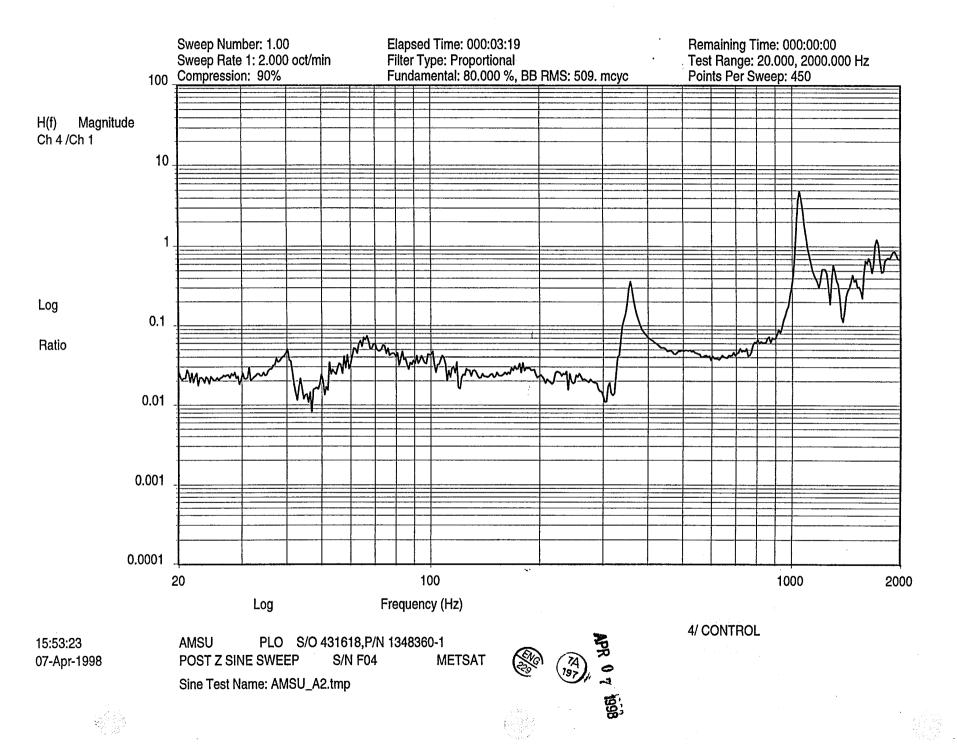


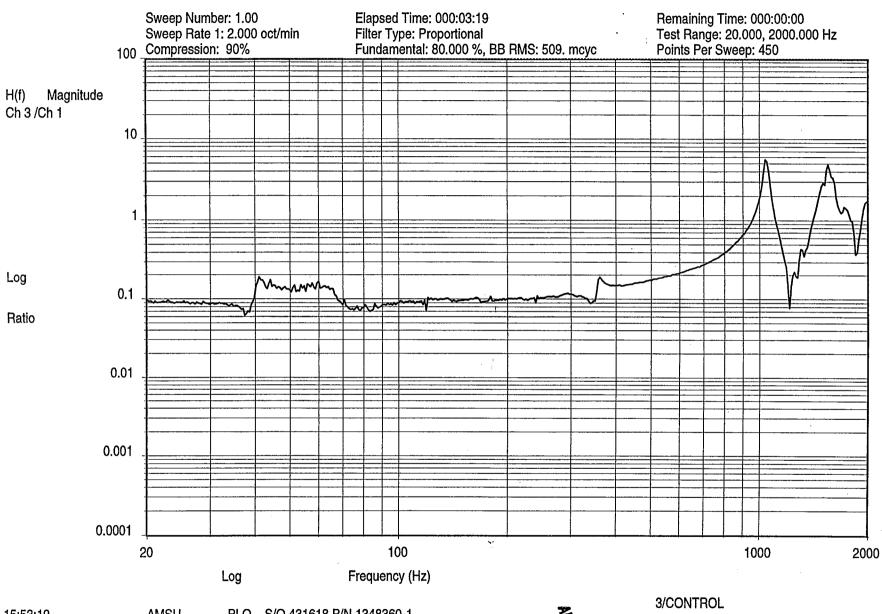












15:53:19 07-Apr-1998 AMSU

PLO S/O 431618,P/N 1348360-1 SWEEP S/N F04 M

POST Z SINE SWEEP

METSAT

#### Sine Version 4.6.0 Test File Listing

Active Frequency Range - Minimum Frequency:

Maximum Frequency:

File Name: AMSU_A2 Current Date: Tue Apr 07 1998 15:46:42 CONTROL PARAMETERS: DURATION -Type: Sweeps Sweeps: 1.00 000:03:19 Test Time (hhh:mm:ss): CONTROL STRATEGY -Control Spectrum: Average Proportional Filter Type: Fundamental 80.00 %, RMS 509. mcyc Filter Specification: EQUALIZATION -0.00 dB Test Level: OPERATION MODE -Enable Manual Operation: STARTUP/SHUTDOWN -10.00 dB/sec Startup Rate: 20.00 dB/sec Shutdown Rate: 0.10 dB Level Increment: COMPRESSION PARAMETERS -Enable Manual Override: Disable Record Manual Changes: SWEEP PARAMETERS -Manual Sweep Start: No Sweep Mode: Log 100%50%25% Sweep Rate Definition: Sweep Rate 1: 2.0000 Oct/min Sweep Rate 2: 1.0000 Oct/min Sweep Rate 3: 0.5000 Oct/min Sweep Duration (hhh:mm:ss): 000:03:19 Enable Manual Override: Record Manual Changes: Disable SWEEP/COMPRESSION TABLE -Rate Compression Segment Frequency Number (Oct/min) (૪) (Hz) 2 90 1 2000 REFERENCE TABLE: Units for Acceleration, Velocity and Displacement: g, in/s, in Value -Alarm +Alarm -Abort +Abort Segment Frequency Type (Units) (dB) (dB) (dB) (dB) Number (Hz) 0.25 -1.5 1.5 -20 20 2000 Acceleration REFERENCE PARAMETERS -20.000 Hz Minimum Frequency: Maximum Frequency: 2000.000 Hz 20.000 Hz Transducer Crossover: 10.000 % Crossover Range: Frequency Points: 450.000 Disable Box Tolerance: IMPORT REFERENCE -Off Import: SPECTRUM DYNAMIC LIMITS -0.000 dB Acceleration Range: Minimum Acceleration (0-pk): 0.250 g Maximum Acceleration (0-pk): 0.250 g 0.768 in/sMaximum Velocity (0-pk): 0.012 in Maximum Displacement (pk-pk): SAFETY PARAMETERS: ALARM/ABORTS -

> 20.00 Hz 2000.00 Hz

Enable for Manual Mode: Yes Reference CSL Threshold: 20.00 dB CSL Count Threshold: 5 LOOP CHECK -Noise Threshold: 30.00 mV RMS Frequency: 100.00 Hz Maximum Drive: 100.00 mV RMS Pause after Loop Check: No DRIVE SIGNAL -10.00 Vpeak Maximum Drive: Attenuated Output Delay: 0.00 Seconds CHANNEL TABLE: Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement Number Type Check (mV/Units) Coupling Type Units Weighting Number Process
1 Control Yes 100.00 Nulled DC Acceler g 0.00 Fundamen Fundamental No 10.00 Nulled DC Acceler g 2 Auxiliary Fundamental Auxiliary No Auxiliary No 3 10.00 Nulled DC Acceler g Fundamental 10.00 Nulled DC Acceler g Fundamental (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation
Number Type Check (mV/Units) Label 1

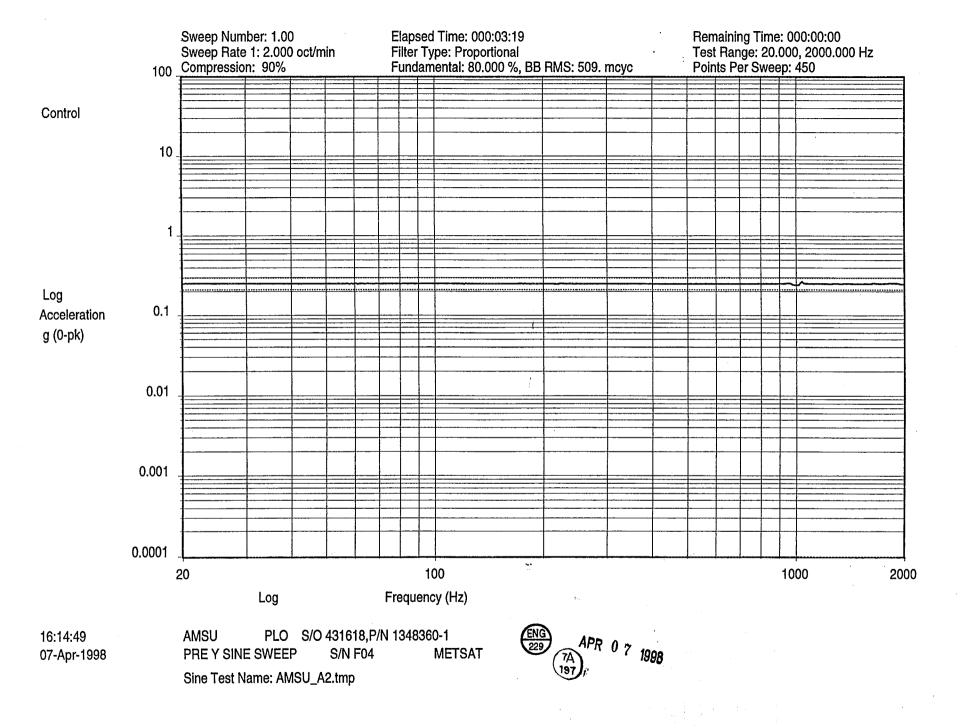
1 Control Yes 100.00 CONTROL
2 Auxiliary No 10.00 Z AXIS
3 Auxiliary No 10.00 X AXIS Label 2 No 4 Auxiliary 10.00 Y AXIS (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Enable H(f) Measurement: H(f) Response Reference Label Pair Channel Channel 1 2 1 2/CONTROL 2 3 1 3/CONTROL 1 4/ CONTROL DOCUMENTATION: Display Text -Title 1: AMSU PLO S/O 431618, P/N 1348360-1 Title 2: POST Z SINE SWEEP S/N F04 METSAT List Only Text -Title 3: Prompt before Test: Yes Data Storage -Off Storage Mode: Message Log -Off Log Mode: Printing -Automatic Plot: Off REMOTE COMMUNICATION TABLE: Enable Remote Communication: No

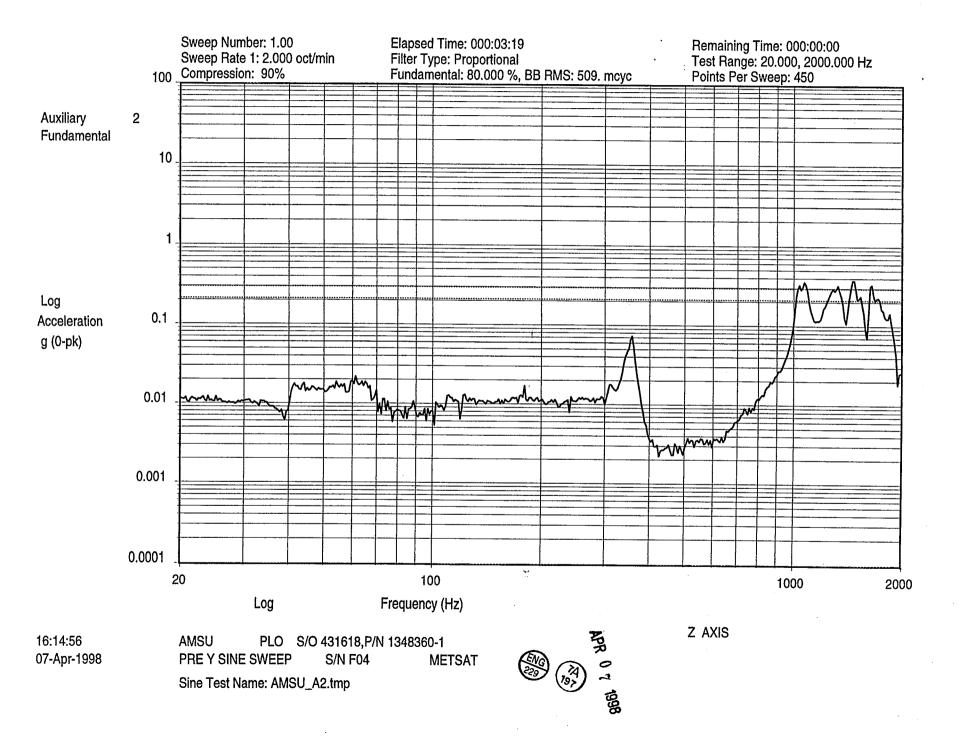
No

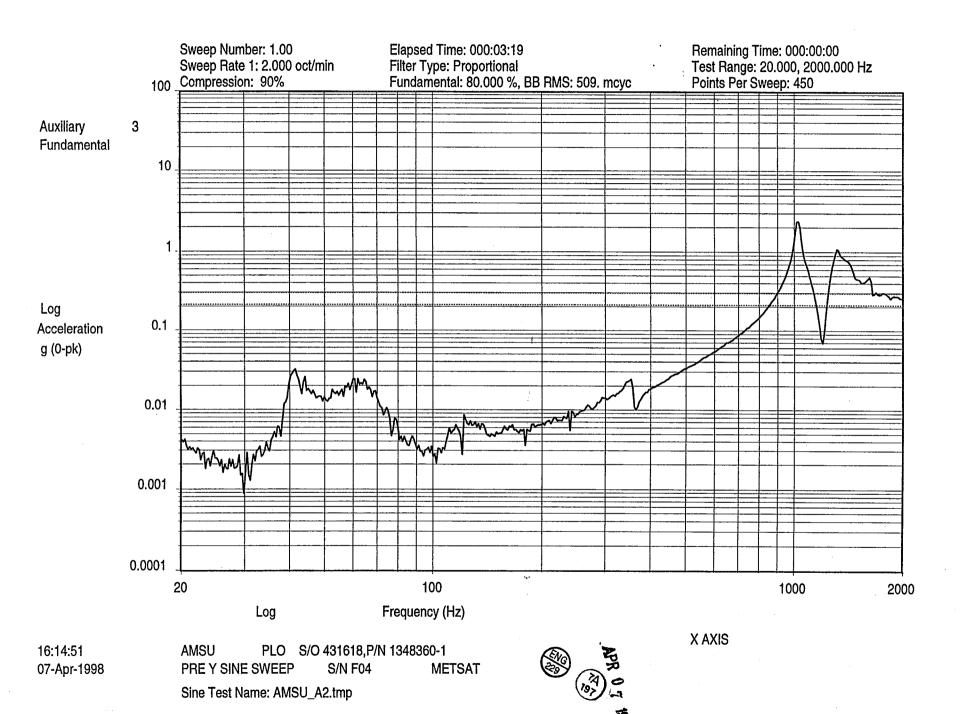
SHAKER LIMITS:

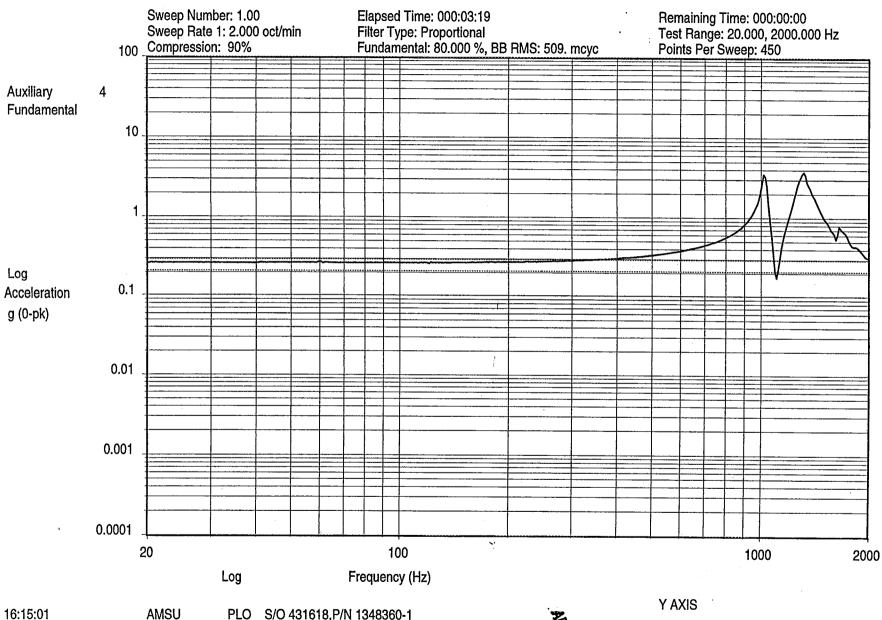
End of Sine Test List

Enable Shaker Limits:







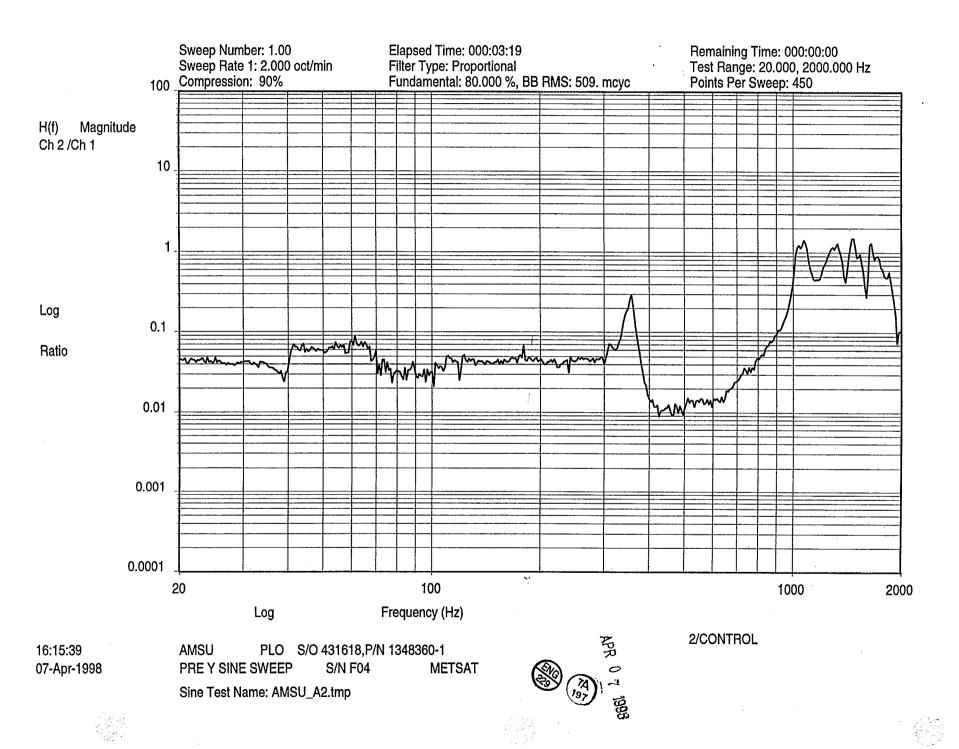


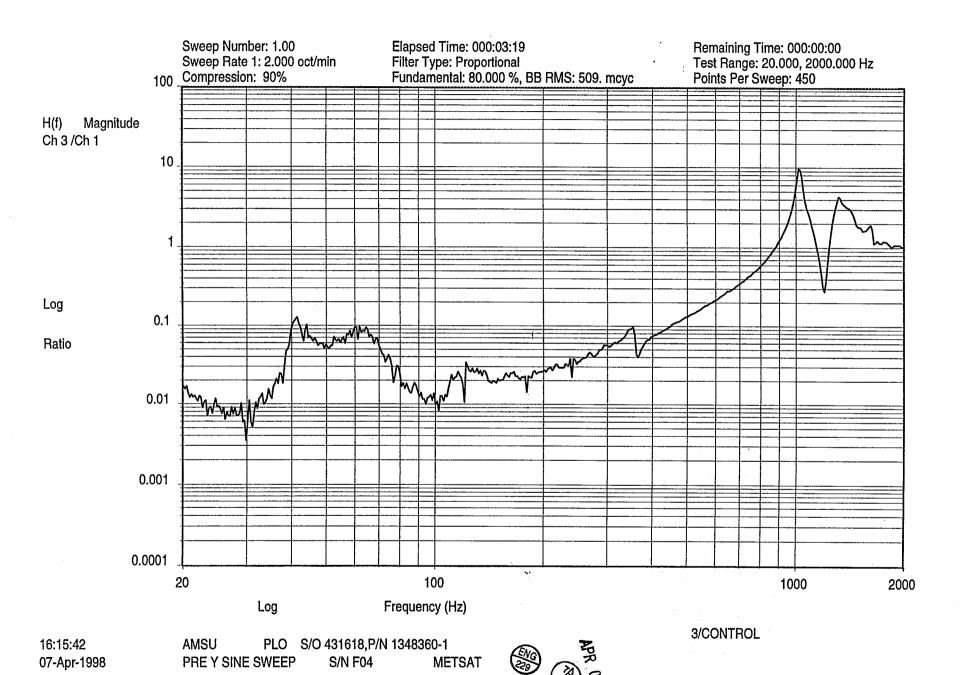
16:15:01 07-Apr-1998 AMSU PLO S/O 431618,P/N 1348360-1 PRE Y SINE SWEEP S/N F04 ME

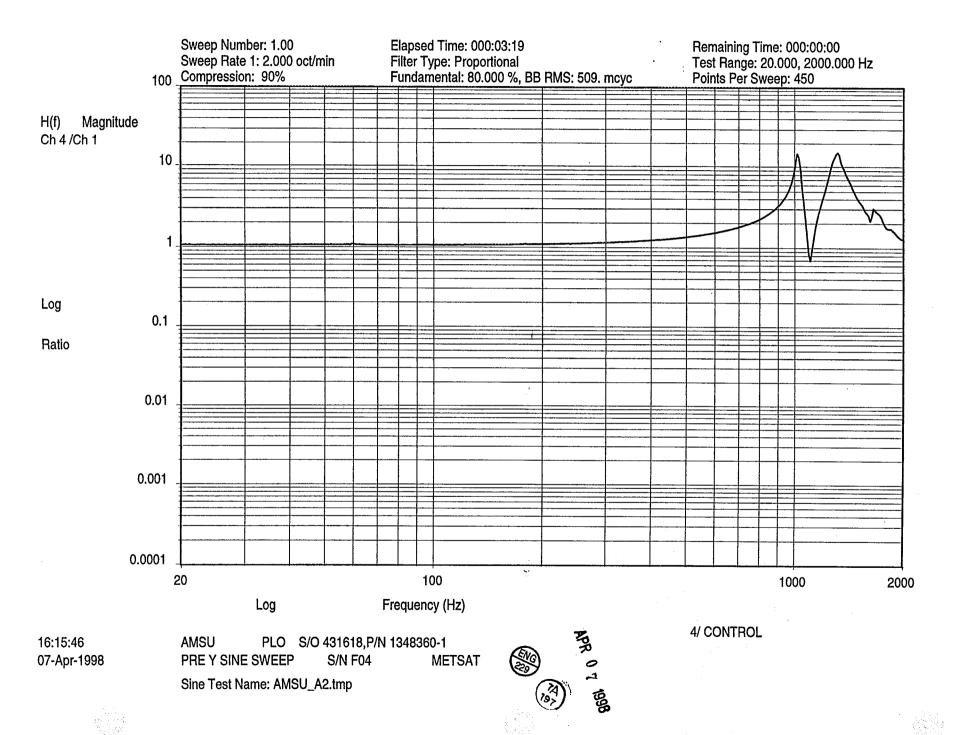
Sine Test Name: AMSU_A2.tmp

METSAT

7A 0 197 1 2 1







File Name: AMSU_A2 Current Date: Tue Apr 07 1998 16:09:41 CONTROL PARAMETERS: DURATION -Type: Sweeps Sweeps: 1.00 Test Time (hhh:mm:ss): 000:03:19 CONTROL STRATEGY -Control Spectrum: Average Filter Type: Proportional Filter Specification: Fundamental 80.00 %, RMS 509. mcyc EQUALIZATION -Test Level: 0.00 dB OPERATION MODE -Manual Operation: Enable STARTUP/SHUTDOWN -10.00 dB/sec Startup Rate: Shutdown Rate: 20.00 dB/sec Level Increment: 0.10 dB COMPRESSION PARAMETERS -Manual Override: Enable Disable Record Manual Changes: SWEEP PARAMETERS -Manual Sweep Start: No Sweep Mode: Log 100%50%25% Sweep Rate Definition: Sweep Rate 1: 2.0000 Oct/min Sweep Rate 2: 1.0000 Oct/min Sweep Rate 3: 0.5000 Oct/min Sweep Duration (hhh:mm:ss): 000:03:19 Manual Override: Enable Record Manual Changes: Disable SWEEP/COMPRESSION TABLE -Segment Frequency Rate Compression Number (Oct/min) (%) (Hz) 2 1 2000 90 REFERENCE TABLE: Units for Acceleration, Velocity and Displacement: g, in/s, in Segment Frequency Type Value -Alarm +Alarm -Abort +Abort Number (Hz) (Units)  $(dB) \cdot (dB)$ (dB) (dB) 1 2000 Acceleration 0.25 -1.51.5 -2020 REFERENCE PARAMETERS -Minimum Frequency:
Maximum Frequency:
Transducer Crossover: 20.000 Hz Minimum Frequency: 2000.000 Hz 20.000 Hz Crossover Range: 10.000 % Frequency Points: 450. Disable 450.000 Box Tolerance: IMPORT REFERENCE -Off Import: SPECTRUM DYNAMIC LIMITS -Acceleration Range: 0.000 dB 0.250 g Minimum Acceleration (0-pk): Maximum Acceleration (0-pk): 0.250 g
Maximum Velocity (0-pk): 0.768 in/s 0.012 in Maximum Displacement (pk-pk): SAFETY PARAMETERS: ALARM/ABORTS -Active Frequency Range -

20.00 Hz

2000.00 Hz

Minimum Frequency:

Maximum Frequency:

Reference CSL Threshold: 20.00 dB CSL Count Threshold: 5 LOOP CHECK -30.00 mV RMS Noise Threshold: 100.00 Hz Frequency: 100.00 mV RMS Maximum Drive: Pause after Loop Check: No DRIVE SIGNAL -10.00 Vpeak Maximum Drive: 0.00 Seconds Attenuated Output Delay: CHANNEL TABLE: Channel Channel Loop Sensitivity Input Transducer Control Profile Measurement Number Type Check (mV/Units) Coupling Type Units Weighting Number Process 100.00 Nulled DC Acceler g Fundamental 1 Control Yes 0.00 2 Auxiliary No 10.00 Nulled DC Acceler g Fundamental 10.00 Nulled DC Acceler g 3 Auxiliary No Fundamental 10.00 Nulled DC Acceler g Auxiliary No Fundamental (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation Number Type Check (mV/Units) Label 1 Label 2 100.00 CONTROL 1. Control Yes Auxiliary 10.00 Z AXIS 2 No Auxiliary 10.00 X AXIS 3 No 10.00 Y AXIS 4 Auxiliary No (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Enable H(f) Measurement: Response Reference Label H(f) Channel Channel Pair 2 2/CONTROL 1 1 2 3/CONTROL 3 1 1 4/ CONTROL DOCUMENTATION: Display Text -Title 1: AMSU PLO S/O 431618,P/N 1348360-1 Title 2: PRE Y SINE SWEEP S/N F04 METSAT List Only Text -Title 3: Prompt before Test: Yes Data Storage -Off Storage Mode: Message Log -Off Log Mode: Printing -Automatic Plot: Off REMOTE COMMUNICATION TABLE: Enable Remote Communication: No

No

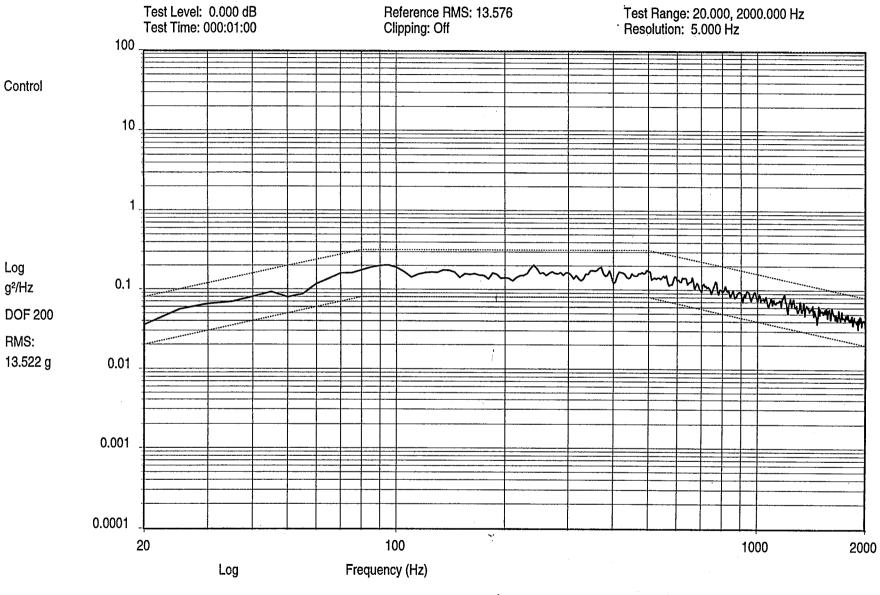
Yes

Enable for Manual Mode:

SHAKER LIMITS:

Enable Shaker Limits:

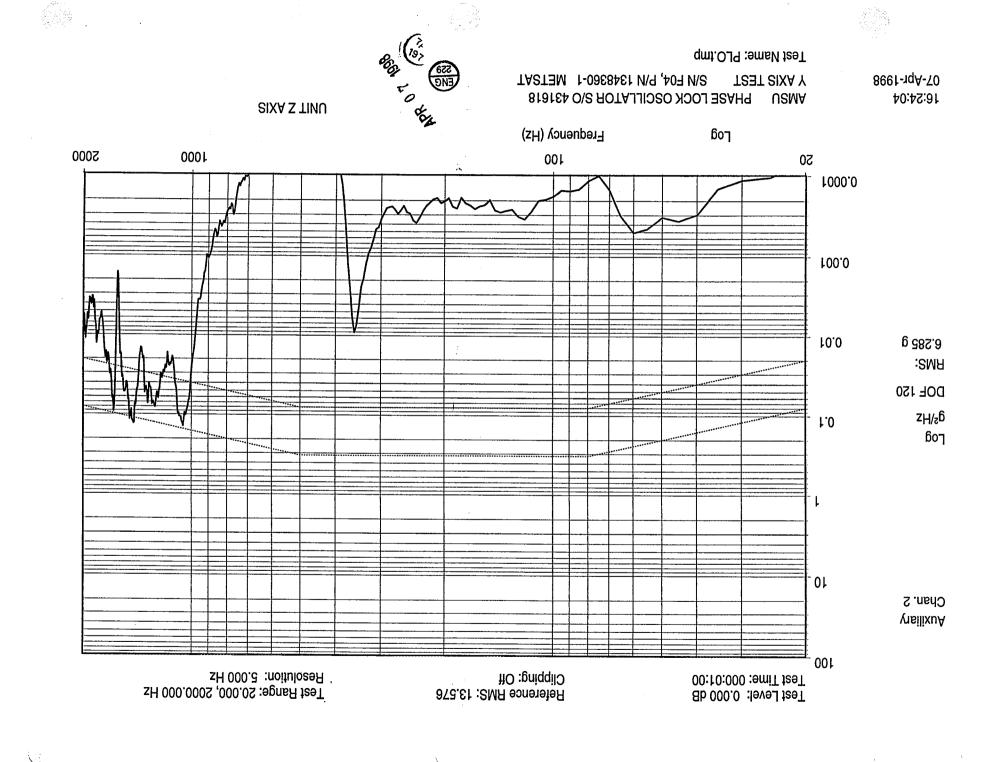
End of Sine Test List

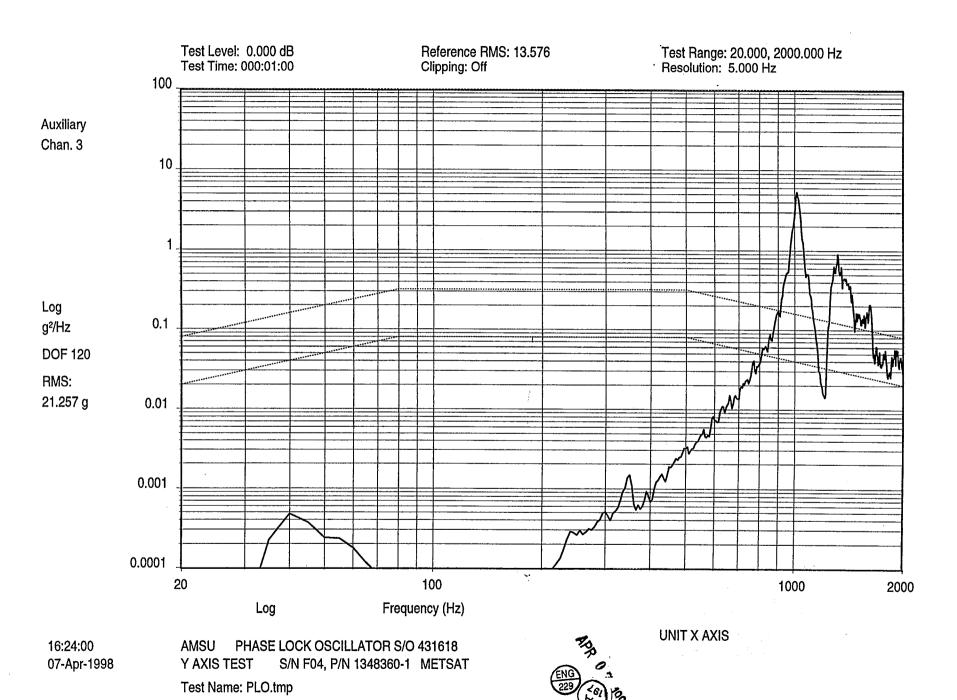


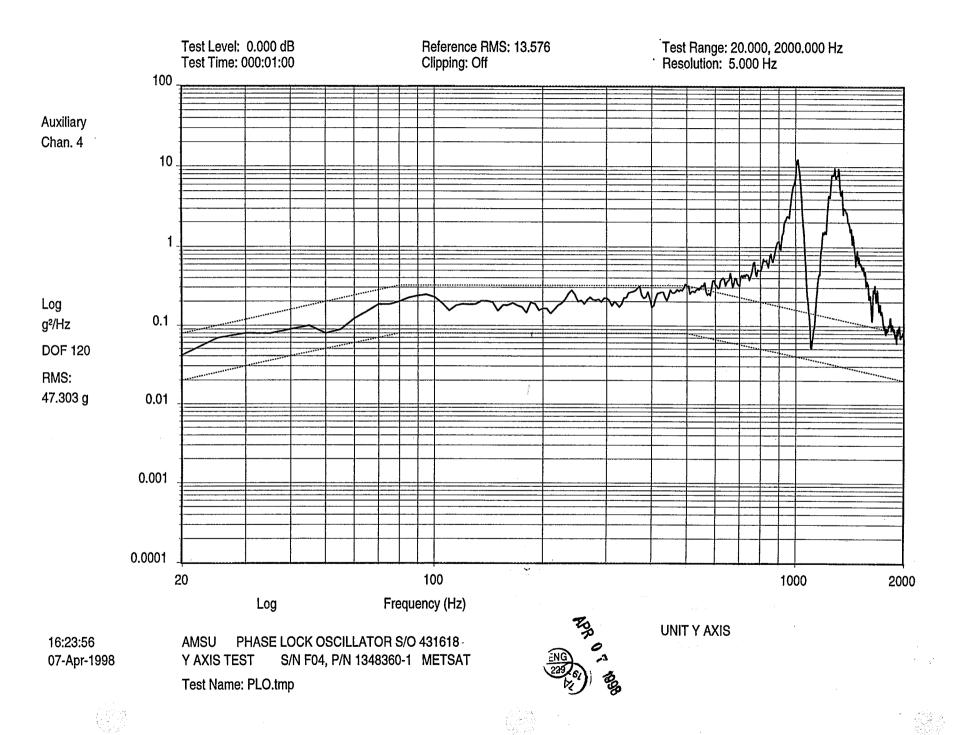
16:23:53 07-Apr-1998 AMSU PHASE LOCK OSCILLATOR S/O 431618
Y AXIS TEST S/N F04, P/N 1348360-1 METSAT

Test Name: PLO.tmp









Maximum Drive:

Pause after Loop Check:

```
File Name:
                                  PLO
Current Date:
                                  Tue Apr 07 1998 16:18:37
CONTROL PARAMETERS:
    DURATION -
        Test Time (hhh:mm:ss):
                                    000:01:00
    CONTROL STRATEGY -
        Degrees of Freedom:
                                        200
        Control Spectrum:
                                      Average
        Output Window:
                                     Kaiser-Bessel
    OPERATION MODE -
        Manual Operation:
                                     Enable
    EQUALIZATION -
        Start Level:
                                       -18.0 dB
        Initial Test Level:
                                       -18.0 dB
        Time at Initial Level:
                                       Off
        Prestored Drive:
                                       Off
    STARTUP/SHUTDOWN -
        Startup Rate:
                                        20.0 dB/sec
        Time to Full Level:
                                        60.0 sec
       Level Increment:
                                         2.0 dB
        Reset Measurement Average:
                                      Yes
        Shutdown Rate:
                                        20.0 dB/sec
REFERENCE TABLE:
    Break
           Frequency
                         Value
                                   Slope
                                            -Alarm
                                                      +Alarm
                                                                 -Abort
                                                                          +Abort
    Point
             (Hz)
                         (g^2/Hz)
                                   (dB/oct)
                                             (dB)
                                                       (dB)
                                                                  (dB)
                                                                           (dB)
       1
                                     3
                                             -3
                                                        3
                                                                  -6
                                                                            6
       2
                20
                         0.04
       3
               80
                         0.16
                                                                       ,
       4
              500
                         0.16
       5
              2000
                         0.04
       6
                                     -3
    TEST BANDWIDTH -
        Minimum Frequency:
                                        20.00 Hz
                                     2000.00 Hz
        Maximum Frequency:
                                       400.00 Lines
        Frequency Lines:
                                         5.00 Hz
        Frequency Resolution:
    SPECTRUM DYNAMIC LIMITS -
        Overall RMS:
                                        13.58 g RMS
        Maximum Acceleration (0-pk):
                                        40.73 g
                                        12.86 in/s
        Maximum Velocity (0-pk):
        Maximum Displacement (0-pk):
                                         0.05 in
    IMPORT REFERENCE -
        Import:
                                       Off
SAFETY PARAMETERS:
   ALARM/ABORTS -
        RMS Alarm:
                                        21.9 g
        RMS Abort:
                                        31.0 g
        RMS Abort DOF:
                                         8
                                     Standard
        Control Signal Loss:
    Spectral Lines Allowed Out -
        Alarm Lines:
                                        60 Lines
        Abort Lines:
                                       100 Lines
   Active Conditions -
                                        20.0 Hz
       Minimum Frequency:
                                      2000.0 Hz
        Maximum Frequency:
                                       -12.0 dB
        Enable for Manual Operation:
   LOOP CHECK -
       Noise Threshold:
                                       100.0 mV RMS
                                       300.0 mV RMS
```

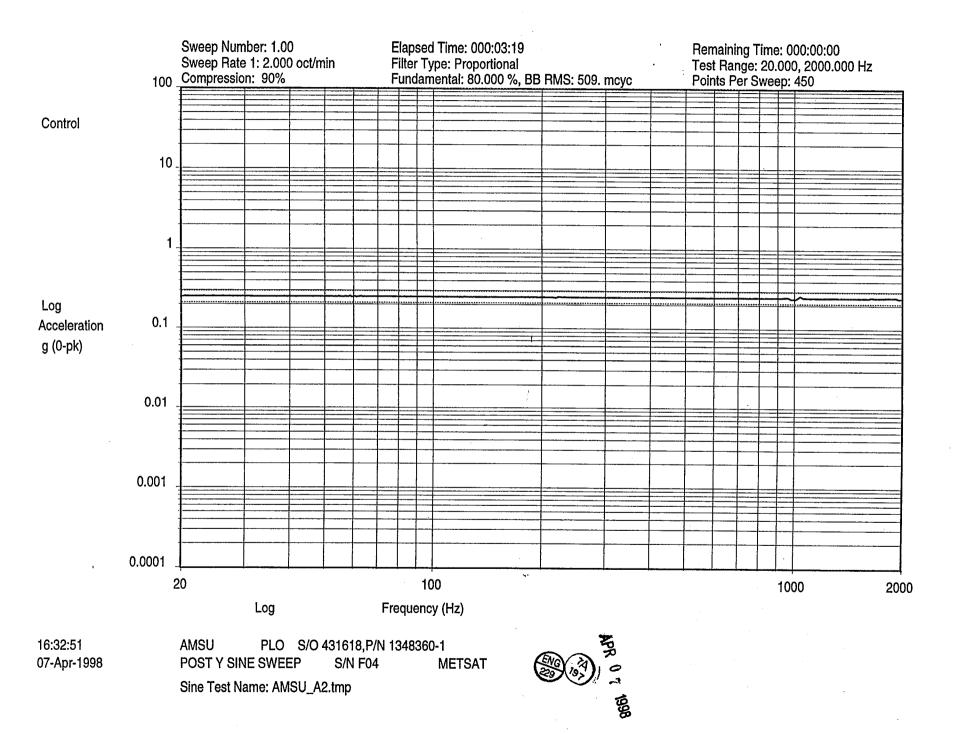
No

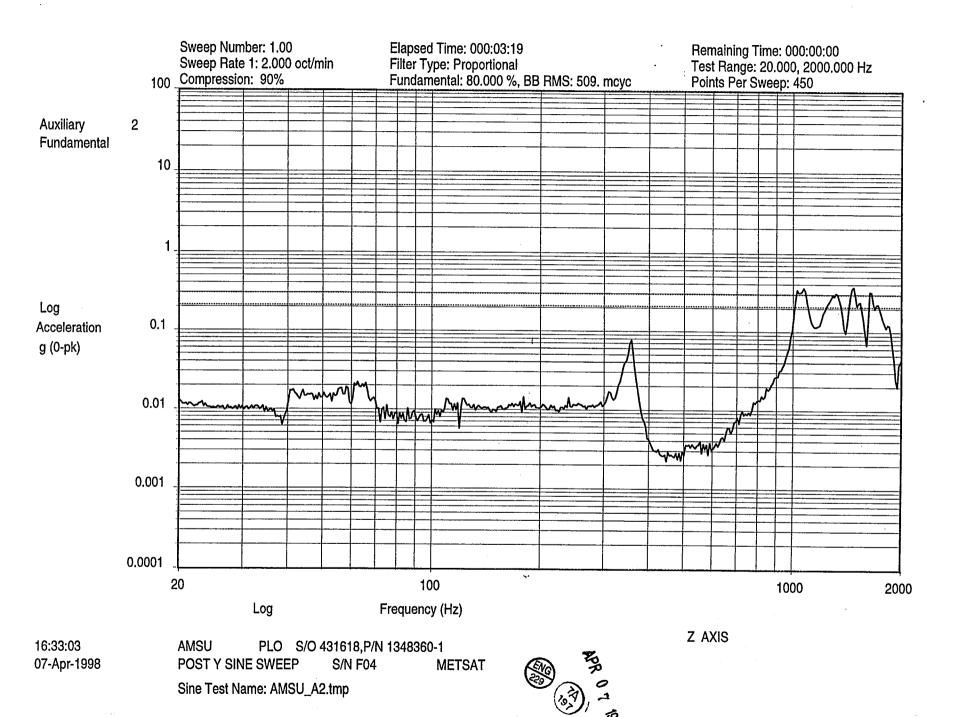
Drive Clipping:

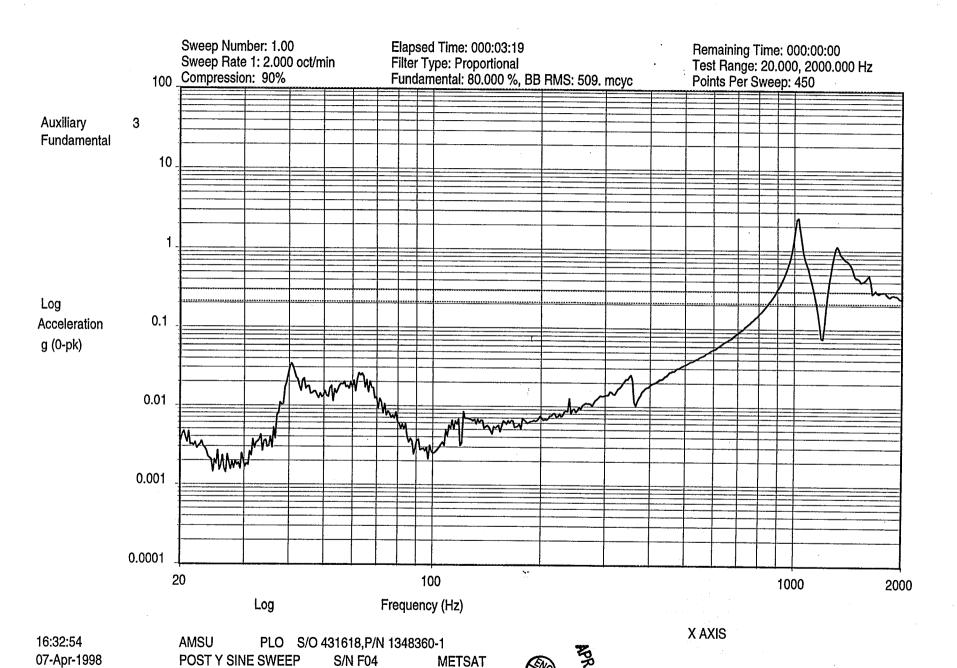
Off

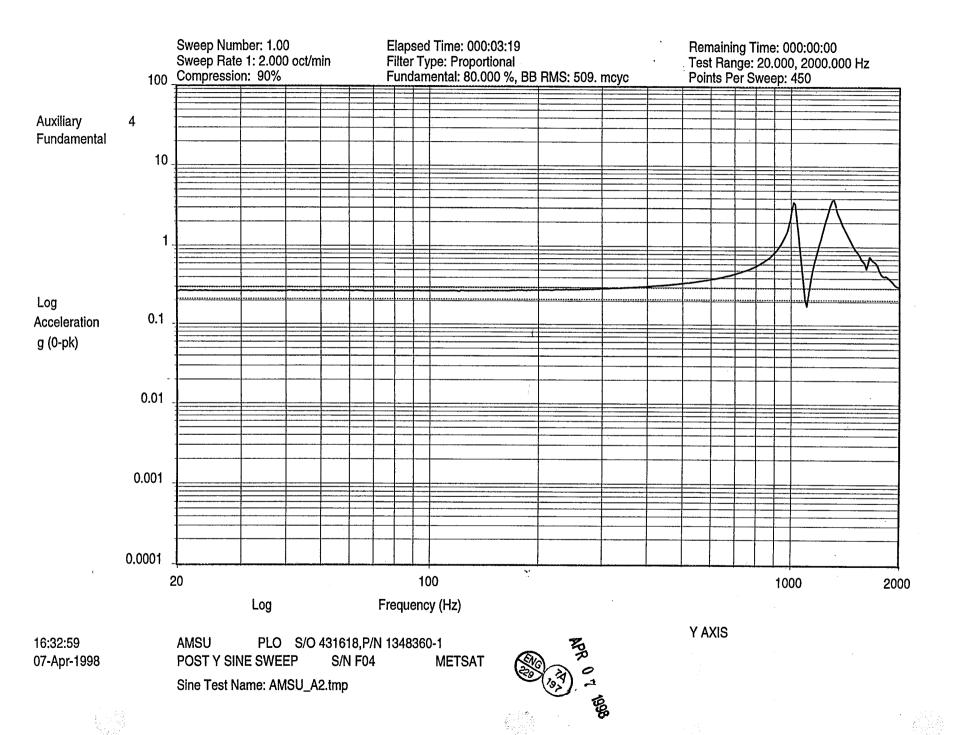
	CHANNEL									Ç.
		Channel	Loop S	ensitivity	Input	Transduce	er	Control	Profile	RMS Abc
		Type	Check (	mV/Units)	Coupling	Type	Units	Weighting	Number	(Units)
	1	Control	Yes	10.00	Null DC	Acceler	g	0.00		,
	2	Auxiliary	No No	10.00	Null DC	Acceler	g	•		
	3	Auxiliary Auxiliary		10.00	Null DC	Acceler	g			
		Auxiliary		10.00		Acceler	g			
	Channel	Channel Type	Loop So	ensitivity	Channel I	Documentat	ion			
	Number	Туре	Check (1	mV/Units)	Label 1			Labe	e1 2	
	1	Control Auxiliary	Yes		CONTROL					
				10.00	UNIT Z AX	KIS				
	3	Auxiliary	No	10.00	UNIT X AX	KIS				
		Auxiliary		10.00	UNIT Y AX	KIS				
	(12 Ina	active Chann	els)							
		R FUNCTION PA								
		ole H(f) Mea			No					· .
		Response								
		Channel	Channe	L						
	1	_	2	3/CONTR	ROL					
	2		2	4/CONTR	ROL					
	3	5	2	5/CONTR	COL					
	DOCUMENT	זא∩דיף בי								
		olay Text -								
		Title 1: AMS	211 1	HACE LOCK	OCCTT.T.ATTC	D C/O 431	<b>6</b> 10			
		Title 2: Y				'N 1348360		TOTA O		
		Only Text -		. 57	N roa, r,	M 1249200	_T MG	TSAT		
		Title 3:			<u> </u>			<b>5</b> :		63
		Prompt befor	re Test.	•	Yes			<i>,</i> :		7 (A) 1 (B)
		Storage -	Le rest.		165					"Sel
		Mode:			Off					
		age Log -			OLL			•		
		Mode:			Off					
		ting -			311					
		Automatic Pl	Lot:		Off					
					<b>~</b>					
	LEVEL SC	HEDULE:								
	Enab	le Level Sch	nedule:		No					
								•		
:	REMOTE C	OMMUNICATION	TABLE:							
		le Remote Co		ion:	No					
,	SHAKER L	IMITS:								
	Enab	le Shaker Li	mits:		No					

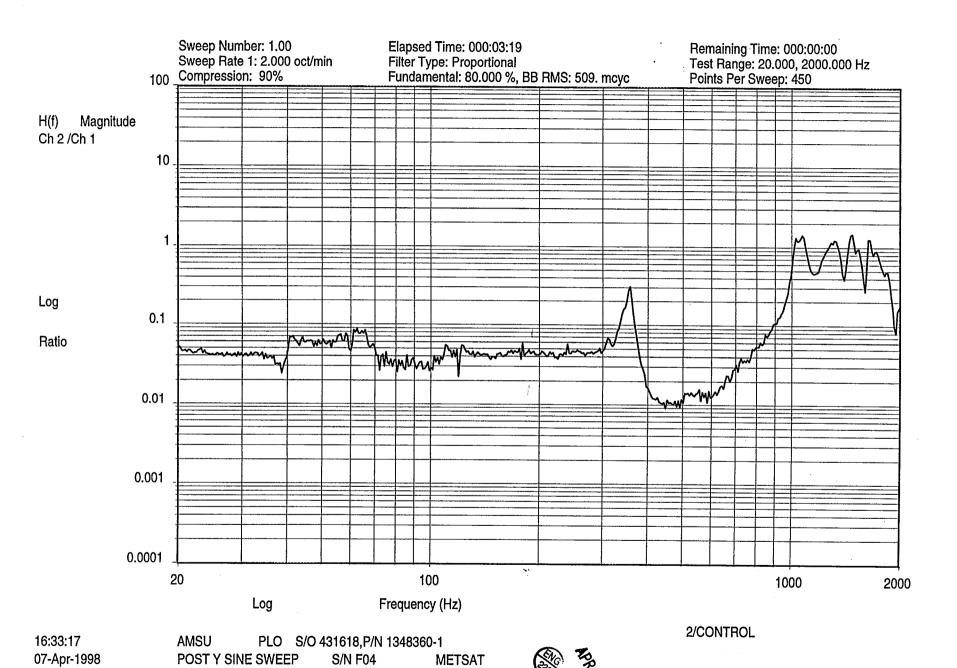
End of Random Test

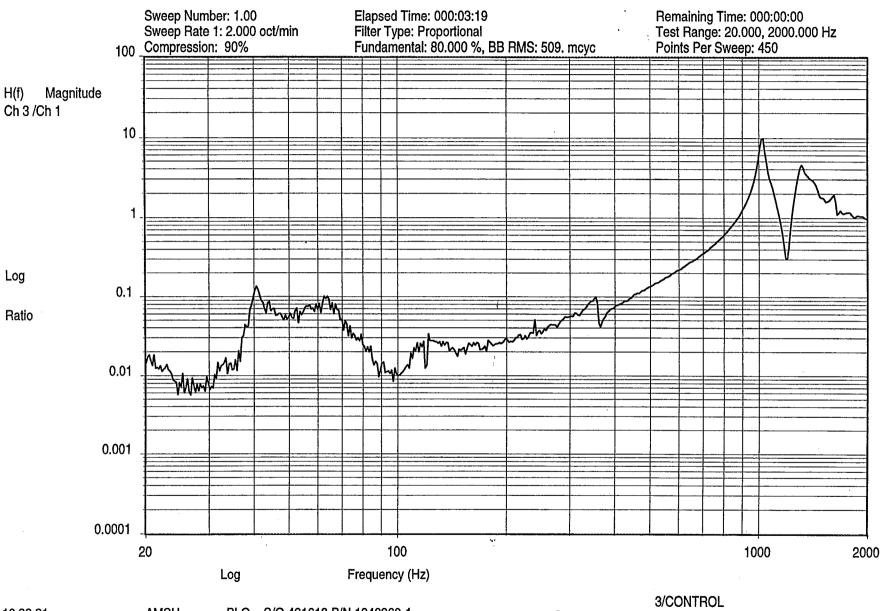












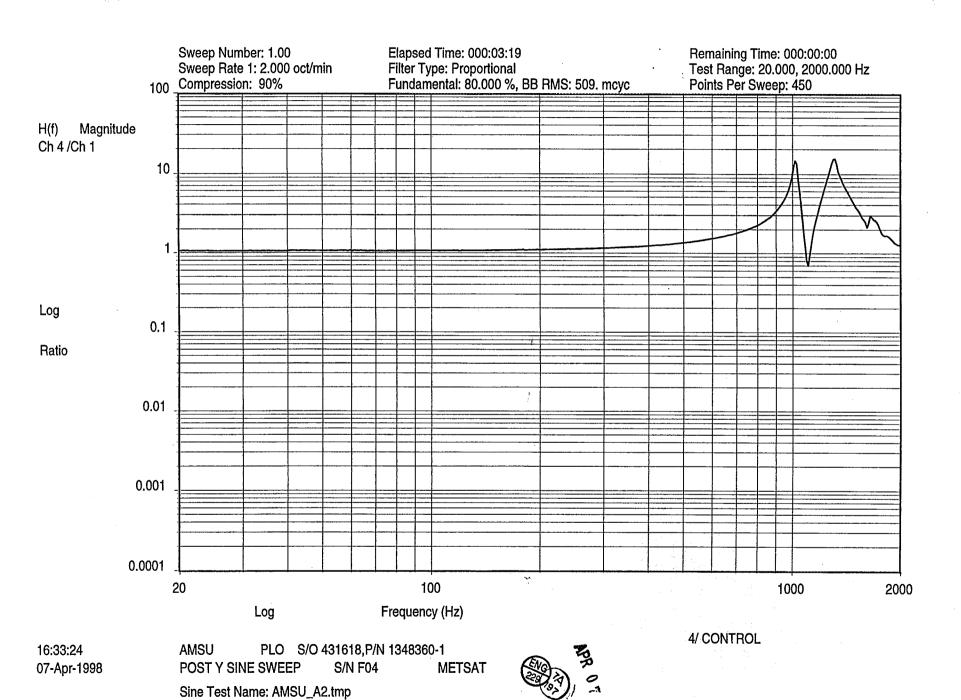
16:33:21 07-Apr-1998 AMSU

PLO S/O 431618,P/N 1348360-1

POST Y SINE SWEEP S/N F04

METSAT





### Sine Version 4.6.0 Test File Listing

Active Frequency Range -

Minimum Frequency:
Maximum Frequency:

File Name: AMSU_A2 Current Date: Tue Apr 07 1998 16:26:27 CONTROL PARAMETERS: DURATION -Type: Sweeps Sweeps: 1.00 Test Time (hhh:mm:ss): 000:03:19 CONTROL STRATEGY -Control Spectrum: Average Filter Type: Proportional Filter Specification: Fundamental 80.00 %, RMS 509. mcyc EQUALIZATION -0.00 dB Test Level: OPERATION MODE -Enable Manual Operation: STARTUP/SHUTDOWN -10.00 dB/sec Startup Rate: 20.00 dB/sec Shutdown Rate: Level Increment: 0.10 dB COMPRESSION PARAMETERS -Manual Override: Enable Record Manual Changes: Disable SWEEP PARAMETERS -Manual Sweep Start: No Sweep Mode: Log Sweep Rate Definition: 100%50%25% 2.0000 Oct/min Sweep Rate 1: 1.0000 Oct/min Sweep Rate 2: Sweep Rate 3: 0.5000 Oct/min Sweep Duration (hhh:mm:ss): 000:03:19 Enable Manual Override: Disable Record Manual Changes: SWEEP/COMPRESSION TABLE -Frequency Segment Rate Compression (Oct/min) Number (Hz) (왕) 1 2000 2 90 REFERENCE TABLE: Units for Acceleration, Velocity and Displacement: g, in/s, in Segment Frequency Type Value -Alarm +Alarm -Abort +Abort Number (Hz) (Units) (dB) (dB) (dB) (dB) 1 2000 Acceleration 0.25 -1.51.5 -20 20 REFERENCE PARAMETERS -20.000 Hz Minimum Frequency: Maximum Frequency: 2000.000 Hz Transducer Crossover: 20.000 Hz 10.000 % Crossover Range: 450.000 Frequency Points: Disable Box Tolerance: IMPORT REFERENCE -Off Import: SPECTRUM DYNAMIC LIMITS -0.000 dB Acceleration Range: 0.250 g Minimum Acceleration (0-pk): Maximum Acceleration (0-pk): 0.250 gMaximum Velocity (0-pk): 0.768 in/s Maximum Displacement (pk-pk): 0.012 in SAFETY PARAMETERS: ALARM/ABORTS -

20.00 Hz

2000.00 Hz

Enable for Manual Mode: Yes Reference CSL Threshold: 20.00 dB CSL Count Threshold: 5 LOOP CHECK -30.00 mV RMS Noise Threshold: 100.00 Hz Frequency: 100.00 mV RMS Maximum Drive: Pause after Loop Check: No DRIVE SIGNAL -10.00 Vpeak Maximum Drive: Attenuated Output Delay: 0.00 Seconds CHANNEL TABLE: Channel Channel Loop Sensitivity Input Transducer Control Profile Measurem
Number Type Check (mV/Units) Coupling Type Units Weighting Number Process

1 Control Yes 100.00 Nulled DC Acceler g 0.00 Fundamer

2 Auxiliary No 10.00 Nulled DC Acceler g Fundamer

3 Auxiliary No 10.00 Nulled DC Acceler g Fundamer Profile Measuremen Auxiliary No Auxiliary No 10.00 Nulled DC Acceler g (Continued for Labels...) Channel Channel Loop Sensitivity Channel Documentation nber Type Check (mV/Units) Label 1

1 Control Yes 100.00 CONTROL

2 Auxiliary No 10.00 Z AXIS

3 Auxiliary No 10.00 X AXIS

4 Auxiliary No 10.00 Y AXIS Number Type Label 2 (12 Inactive Channels) TRANSFER FUNCTION PAIR TABLE: Enable H(f) Measurement: H(f) Response Reference Label Pair Channel Channel 2 1 1 2/CONTROL 2 3 1 3/CONTROL 1 4/ CONTROL DOCUMENTATION: Display Text -Title 1: AMSU PLO S/O 431618, P/N 1348360-1 Title 2: POST Y SINE SWEEP S/N F04 METSAT List Only Text -Title 3: Prompt before Test: Yes Data Storage -Off Storage Mode: Message Log -Off Log Mode: Printing -Off Automatic Plot: REMOTE COMMUNICATION TABLE: Enable Remote Communication: SHAKER LIMITS: Enable Shaker Limits: No

End of Sine Test List

Fundamenta Fundamenta

Fundamenta

Fundamenta

## Section 3A; Frequency and Power Hystersis - F03

This section contains data regarding frequency and power hysteresis. In three temperature cycles, the maximum change in frequency was 4 kHz and the maximum change in power of 0.08 dB, both neglectfully small.



# TEST DATA SHEET 7 (Sheet 1 of 3) Temperature Cycling (Paragraph 4 2 2)

	1		Cycling (Paragra			•
Test Setup Verified:_	M. Hall Signature	·				:
· · · · · · · · · · · · · · · · · · ·	•			·: .	<del></del>	·
Temperature Cycle	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6
Frequency 57.290344 GHz ±200 kHz	57.220324	57.290 ³²⁷	57.290331	57290330	57,290332	57,290334
Output Power 17 to 20 dBm	18.87dbm	18.90	18.96 dBm	18.93 Din	18.57 dbr	18.88 db
Frequency 57.290344 GHz ±200 kHz	57,29033	57290332	57.29 <i>033</i> 6			· · · · · · · · · · · · · · · · · · ·
Output Power 17 to 20 dBm	18.96 dBm	18.88db	18.93434			
	324 333 327 332 33 336					
						-
•						
		_		11	·-1	
hop Order No.: 49		-	Test Engine	er: <u>M. Ho</u>	uly 5	
Init Serial No.: FC	/ /		Quality Ass	urance:	(A) A/V	dx
Date 14/	13/98		DCMC:	G. Ja	lacgae	<del>-</del>

# TEST DATA SHEET 7 (Sheet 2 of 3) Temperature Cycling (Paragraph 4.2.2)

	Temperature Cycling	(Paragraph 4.2.2)					
CYCLE#							
Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current				
22 ±2 Note 1	23.7°c	15.02/520ma	-15,07/66.38 mac				
32 ±3	31.6°C	15.02/524 ma	-15.07/66.99ma				
42 ±3	41.000	15,62/532 MA	-15.07 /67.84 mA				
52 ±3	52,300	15.02/528mA	-15,07/69.1mA				
60 ±2 Note 2	58,9 00	15,01/534 mA	-15,06 /69,4mA				
52 ±3	49.0°C	15.02/534mA	-15.05/68 ma				
42 ±3	42.5°C	16.02/533mA	-15.05/67.8mg				
32 ±3	33,30°C	15.02/327mA	-15,05/67.1mA				
22 ±2 Notes 1, 3	2320°C	15.02/521 MA	-15.06/663 ma				
12 ±3 (Unit Off)	12.1°C	15,02/AHA 5/1 MA	-15,06 AHA 65,2 MA				
2 ±3 (Unit Off)	2,6°C	15.02 NA 505 MA	<u>                                     </u>				
-12 ±3 (Unit Off)	-10,8°C	15.03 NA 495 MA					
-22 ±3 (Unit Off)	-20,30C	1503 NA. 486 M	-15,07 NA 61,99 MA				
-30 ±2 (Unit Off) Note 2	- 28.7°C	15,03 N/A 479ma					
-30 ±2 Note 4	- 29.5°C	15.04 /48ZMA					
-20 ±3	- 18.7°C	15.04 492 ma	-15.07  -61.93 MA				
-10 ±3	- 9,2°C	15.04/500 MA	-15.08 -63.42 m A -15.08 -64-55m A				
0 ±3	• ک° ر	15.04 506ma					
10 ±3	9.7°C	15.04/512MA	,				
22 ±2 Note 1	21.0 ℃	15.03/519mA	-15.08 1-66.21mA				
OTES: Stabilize for minimum of 5 m cycle number (reference Figu	inutes. Record frequency re 12). After recording dat	output power and current as ta, cycle dc power and verif	s required for corresponding y unit reacquires lock.				
	Minimum 4 hour dwell at temperature.						
3. Turn OFF unit power for transition to cold.							
After soak, turn ON unit pow		currents.	EACK 10/6/8				

Test Engineer:

DCMC: _

Shop Order No.: 43/6/5

Unit Serial No.: Fo 3

### TEST DATA SHEET 7 (Sheet 2 of 3) Temperature Cycling (Paragraph 4.2.2)

	<b>'</b> "	
CYCLE#	<u>_</u>	

		•	
Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
22 ±2 Note 1	22.9°C	15.01/521MA	15.08 /-66.36
32 ±3	32.8 °C	15.01 / 526.3 mA	-15.08/-67.14
42 ±3 (0-)	42.2°C	15.02 /53 Z MA	
52 ±3(00°) Nontr 51.7	51.7°C	15.02/528 MA	-15.08/-69.11
60 ±2 Note 2	58.9°C	15.02 /532mA	-15.07/-69.54
52 ±3	52,7°C	15.01/530me	-15.07/69.24
42 ±3	42,00°c	15.01/532ma	-15.08/67.83
32 ±3	32.4°C	15.01 / 526 ma	-15.08/, 67.15
22 ±2 Notes 1, 3	23.90 C	1501 / 52/ma	-15.03/66.47
12 ±3 (Unit Off)	12,1°C	N/A	N/A
2 ±3 (Unit Off)	2,500	N/A	N/A
-12 ±3 (Unit Off)	-12.6°C	N/A	N/A
-22 ±3 (Unit Off)	- 22,3 °C	N/A	N/A
-30 ±2 (Unit Off) Note 2	-29.7°C	N/A	N/A
-30 ±2 Note 4	-30.7°C	15.04/479.3mA	-15.07/61.6mA
-20 ±3	-20.6°C	15.04/493 MA	-15,08/62,4mm
-10 ±3	-11:1°C	15,04/A99 ma	-15.09/-63.35ma
0 ±3	-1.7°C	15.04/505 m A	-15.09/64.2mA
10 ±3	9.6°C	15.03/512mA	-15.09/-65.3M
22 ±2 Note 1	21.200	115,01/519 ma	1-15.10/-66.27m

### NOTES:

- Stabilize for minimum of 5 minutes. Record frequency output power and current as required for corresponding 1. cycle number (reference Figure 12). After recording data, cycle dc power and verify unit reacquires lock.
- Minimum 4 hour dwell at temperature. 2.
- Turn OFF unit power for transition to cold. 3.
- After soak, turn ON unit power, record temperature and currents. 4.

Shop Order No.: 431615	Test Engineer: G. LAMBERT
Unit Serial No.: F03	Quality Assurance: (5,5) M/S 193
Date:4, 14, 98	DCMC: F. Halagac

## TEST DATA SHEET 7 (Sheet 2 of 3) Temperature Cycling (Paragraph 4.2.2)

			Temperatu	re Cycling (Paragrap	h 4.2.2)
CYCLE#	3				

		. •		
	Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
2	2 ±2 Note 1	21.700	15.02V/520mA	-15.10 V/-66.3mA
3	2 ±3	31,200	15.02/525 ma	<u> </u>
4	2 ±3	40.6°C	15.01/531ma	
5	2 ±3	52,0°C	14,98/528 ma	
6	0 ±2 Note 2	60.7°C	14.97/533MA	-15.09/-69.7MA
5	2 ±3	52.0°C	14.97/529 mA	-15.09/-69.17mA
4	2 ±3	42.6°C	15.03/533mA	-15.09/-67.90mA
3	2 ±3	30.8°C	15.03/525mA	-15.09/-106.96m4
2	2 ±2 Notes 1, 3	22.5°C	15.03/521 mA	-15.09/66.40mA
1	2 ±3 (Unit Off)	13.2°C	N/A	N/A
2	±3 (Unit Off)	2.3° C	N/A	N/A
-	12 ±3 (Unit Off)	-12.7°C	N/A	N/A
-	22 ±3 (Unit Off)	-22.6°C	N/A	. N/A
-	30 ±2 (Unit Off) Note 2	-28.9°C	N/A	N/A
-	30 ±2 Note 4	-29,7°C	15.04/480ma	-15.08/6/.82 ma
	20 ±3	-21,0°C	15.04/490ma	-15.58/62.25 ma
-	10 ±3	-11,5°C	15,04/ 498 ma	-15.10/63.33 ma
0	) ±3	-0,2°C	15,04/506MA	-15,09/64,4 mA
1	0 ±3	9.2°C	15.03/512 ma	-15.08/65.37 ma
2	22 ±2 Note 1	22,3°C	15,03/ 520 ma	-15.09/66.40 ma

## NOTES:

- Stabilize for minimum of 5 minutes. Record frequency output power and current as required for corresponding cycle number (reference Figure 12). After recording data, cycle dc power and verify unit reacquires lock.
- 2. Minimum 4 hour dwell at temperature.
- 3. Turn OFF unit power for transition to cold.
- 4. After soak, turn ON unit power, record temperature and currents.

Shop Order No.: 431615	Test Engineer: M. Lohnan
Unit Serial No.:	Quality Assurance: 4-17-18
Date: 4/15/98	DCMC: La Jala agar

		TEST DATA SHEE Temperature Cycling		
CY	CLE#			
	Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
	22 ±2 Note 1	22.7%	15.01   520ma	-15,11/66,41ma
	32 ±3	31.9°C	15,01 / 525 ma	-15,11 /67,16me
	42 ±3	41.3°C	15.02 / 531 ma	-15.11 /67.80ma
	52 ±3	50.7°C	15.03/528ma	-15.11 / 69.21 ma
	60 ±2 Note 2	59.0°C	15:01 / 532ma	-15.11 / 69.64ma
	52 ±3	NA	NIA	15.11 / 69.64ma
	42 ±3	11/A	NA	N/A 74
	32 ±3	NA	ALIA	NA
	22 ±2 Notes 1, 3	N/A	NIA	NA
	12 ±3 (Unit Off)	NA	N/A	N/A
	2 ±3 (Unit Off)	NIA	N/A	N/A
	-12 ±3 (Unit Off)	NIA	N/A	N/A
	-22 ±3 (Unit Off)	NA	N/A	N/A
	-30 ±2 (Unit Off) Note 2	NA	N/A	N/A
	-30 ±2 Note 4	-30.7°C	15.04v/48/mA	-15.09 /-61.69 mA
	-20 ±3	-19.4°C	15.04/494 mA	-15.11 /62.48 MA
	-10 ±3	-9.5°C	15.04/500 mA	-15.10 /-63.52mf
	0 ±3	-0,30°C	15.04/506 MA	-15.10/64.43 mA
	10 ±3	10.70°C	15.03/51344	-15.10 1-65-39ap
	22 ±2 Note 1	22.1°C	15.03/520 mA	-15.1 /66.41mA
NO:	TES: Stabilize for minimum of 5 n cycle number (reference Figu	ninutes. Record frequency	output power and current as	s required for corresponding y unit reacquires lock.
2.	Minimum 4 hour dwell at ten	٠ .		•
	•	•		C 5 0
3.	Turn OFF unit power for tran		d corrects	EAR-WIGHT #08
4.	After soak, turn ON unit pow	er, record temperature and	curons.	408
Sho	p Order No.: 43/6/5	r	Test Engineer:	19 20 to
TT_:	Sorial No. (-03	(	Quality Assurance:	790 00

Quality Assurance:

DCMC:

Unit Serial No.:

Date: _

4-20-98

TEST DATA SHEET 7 (Sheet 2 of 3)
Temperature Cycling (Paragraph 4.2.2)

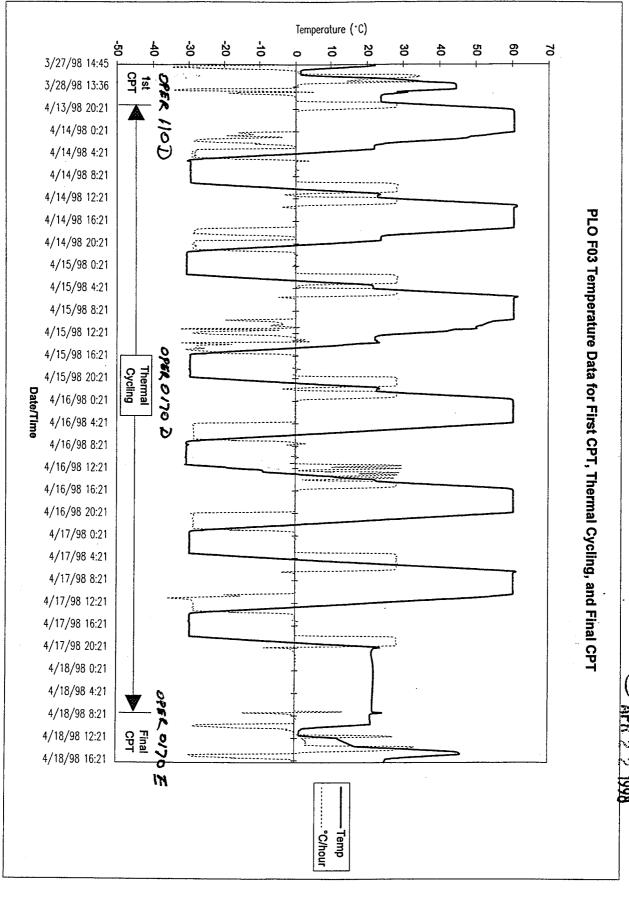
	cycle#5	3H+ 1 or de	d famil	•		
	Baseplate Tempe		tual Baseplate nperature TC1	+15V Current	-15V Current	
	22 ±2 Note 1		22.1°C	15.03 /520mA	-15. 1 /166.41 mA	
	32 ±3		32.8°C	15.02/527mA	-15.11/67.30mA	
	42 ±3		12 2° C	15.03/533mA	-15.12/68.04mA	
	52 ±3	5	1.6°C	15.03/528mA	-15,12/-69.21	MA
559	60 ±2 Note 2	5	7,8°C	15.01 / 532 ma	-15.11 / 69.68 ma	-
(223)	52 ±3		JA	NA	N/A	
20	42 ±3	·	1			
Hines /	32 ±3					
120/78	22 ±2 Notes 1, 3					
11	12 ±3 (Unit Off)			N/A	N/A	
	2 ±3 (Unit Off)	-		N/A	N/A	
	-12 ±3 (Unit Off)			N/A	N/A	
	-22 ±3 (Unit Off)	./	V/A	N/A	N/A	.
EE 9 33	3430 ±2 (Unit Off)	Note 2 - 29	1.0°c	N/A	N/A	
\$ 10 24	-30 ±2 Note 4	- 28	1°C	15.04/488MA	-15.13/61.7m 1	
	-20 ±3		5°C	15.05/492 mA	-15.13/62.3mA	
	-10 ±3 (2,0)	4/17/98 -12	2.0°C	15.05/499mA	-15.13/-63.3mA	
	0±3 9/1.5	20mm - 3	5°C - 37°C	15.04/505 ma	-15/164.98mA	
	10 ±3	1	5.7°C	1503/5/3ma	-15.11/-65.46 mg	
	22 ±2 Note-1 t	una 2	0.1%	15.03/519mA	-15,12/-66.3mA	]
	<u> </u>					
	NOTES:  1. Stabilize for minory cycle number (r	nimum of 5 minutes. eference Figure 12).	Record frequency After recording da	output power and current a ta, cycle dc power and veri	ns required for corresponding fy unit reacquires lock.	ğ
	2. Minimum 4 hou	r dwell at temperatur	e.			
	3. Turn OFF unit ;	ower for transition t	o cold.			
	4. After soak, turn	ON unit power, reco	ord temperature and	currents.	Efet 101618	
,		_			000	
				1	a , / ·/	•
	Shop Order No.:	43/6/5	Т	est Engineer: MR. 4	farbrown Cax	
	Unit Serial No.:	F0.3		Quality Assurance:	7 96 he (190)	
	Date: 4/16	198		OCMC:	-20-98	

		TEST DATA SHEE! Temperature Cycling	(Paragraph 4.2.2)	
CY	CLE# 5 SHT 2 0F2	- Shamba (200)		
	Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
	22 ±2 Note 1 Co NT.	FROM SHT 10	F 2 (luna	
	32 ±3	31.5°C	15.03/50 526 mA	-15.12/-67.2m A
	42 ±3	42,900	15.02/532 ma	-15,12/-67.94ma
	52 ±3	52,3°C	15.01/528ma	-15,11/-69,23 ma
	60 ±2 Note 2	59.4°C	1502/532 ma	-15.11/-69,73ma
	52 ±3	N/A	N/A	N/A
	42 ±3		1 1 1 1 1 1 1 1 1	
	32 ±3		<u>'</u>	[
	22 ±2 Notes 1, 3	N/A	N/A	N/A
	12 ±3 (Unit Off)	1	N/A	N/A
	2 ±3 (Unit Off)		N/A	N/A
	-12 ±3 (Unit Off)		N/A	N/A
	-22 ±3 (Unit Off)	N/A	N/A	N/A
	-30 ±2 (Unit Off) Note 2	-29.3°C	N/A	N/A
	-30 ±2 Note 4	-29,6°C	15.04/480MA	-15.11 /61.8 mA
	-20 ±3	-21,3°C	15.04/492 mA	-15,12/-62,4m/
	-10 ±3	-11,800	15.04/498 mA	-15,11 /-63,3mA
	0 ±3	1-0,5°C	15.04 /506 mA	-15.11 /-64,5mA
	10 ±3	9.0°C	15,04/512 MA	-15.11/-65.3mA
	22 ±2 Note 1	22,2°C	15,03/520 mA	-15,12/-66,5mA
NO 1.	TES: Stabilize for minimum of 5 n cycle number (reference Figu	ninutes. Record frequency ure 12). After recording da	output power and current at ta, cycle dc power and verif	s required for corresponding y unit reacquires lock.
2.	Minimum 4 hour dwell at ter	nperature.	•	EDCR 101618
3.	Turn OFF unit power for tran	nsition to cold.		4089
4.	After soak, turn ON unit pov	ver, record temperature and	currents.	
ł	op Order No.: 431613 it Serial No.: F03	Q	Cest Engineer: (190)  Quality Assurance: (190)	, ohn 10-98
Dat	ie: 4/17/90	D	CMC:	

0198

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/	/h ·	<del></del>	-7	11)	$\mathcal{K}$	F .	W	^ ^ (			13 13		02 5 C	d	·/	N _	A	7	νŢ OC	25 121	, s 19	W BB	~) J	) האה	Z И;	L V	Λι //0	ი )	01	wz we	ار از اح الر	l.' 'L		נפני האר	יים ניסיו	up 1015	/ 7     CC	) V	2	95 K	1			
	TC#1	28,62	77	300		23,2.00	21.3°C	37,65	29.5%	000	50 C 22.4 C 1,10	De 54.0 %		,9°C	9°C		2,0	77			60.3,C		2	0			000				- 30 / C	27:75		2,0	ςq. 4°C	- CO · 3 ° C	-24.30	-29,6°C	+23,2°C	1 22,7,6	H. Hay !	(8/2) CB/2/H	22/	86100/11
June A commo (o )	Date	84c1/t		, ,	114 98	4/14/18	85/4/14	4/14/188	4. 14. 98	4.14.98	4.14.98	21-51-7	86-41-4	ナナ	86-41-4	h)~	(۱۶/	4/12/146	4/12/18	4/12/48	4/15/198	4/15/98	- 84 S1/h	4/18/88	85/E1/th	13/5/12	4/16/88	4716/98	4/11/198	4/16/98	86/7/1/	4/16/2	2/0/11/2	7/17/93	47/7/98	9.17.98	86-11-4	4/11/38	\$6/01/#	4/11/18	Test Engineer:	<b>)</b>	Quality Assurance:	DCMC
man to distort	Time	6.30 pm		8:20 Pm	02:00	2; 40 Am	3,25,42	5,20 Am	9:25 Am	₩ Ø2:	11:450 PM	かれ かない	Sign pr	off the	7.40 PM	Į	1,48 am	4:10 am	4:15 am	5:45 am	:45	12:50 an	W100.77	8:00 pm	4:55pm	10:25 pm	12:00 Am	20:00	04100	6720	1120 am	to Som	8:10 614	11.25 /00	1,525 Am	10,38 AM	Mr 20. C	Md 01:9	8018 MM	NYORIA	15		0	
	Step No.	1	2.	3.	. 4.	5.	6.	7.	∞	9.	10.	11. /3	12.	13. 7.7	14.	. 15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.	27.	28.	29.	30.	31.	32.	33.	74.	36.	37.	38.	39.	40.	(1) (c) (3) (6/5)		nit Serial No.: 102	4/13/98
	<u>_</u>	<u>.</u>	<u>ــاـ</u> ـ	ل	1	٠		L	<u></u>			7	<del></del> >	<del>'</del>	<del>,  </del>	1	٠	<del></del>	<b></b>		J				-l			•													د	5. }	nit Ser	•

A-18



the 18

DAT35

FO4 Base plate

	paseplate			base piur c	
Date/Time	Temp	°C/hour	Date/Time	Temp	°C/hour
3/27/98 14:45	22.115	0.425	3/26/98 14:	:06 26.644	12.135
3/27/98 14:49	22.087	-4.76	3/26/98 14:	:10 27.729	2.08
3/27/98 14:53	22.08	-12.48	3/26/98 14:	:14 28.747	<b>'</b> -16.795
3/28/98 9:48	22.2	-23.29	3/26/98 14:	:18 29.071	-26.07
3/28/98 9:52	21.135	-29.01	3/26/98 14:	:22 28.145	-23.715
3/28/98 9:56	19.584	-32.575	3/26/98 14:	25.388	-10.31
3/28/98 10:00	17.542	-33.68	3/26/98 14:	:30 23.857	-3.975
3/28/98 10:04	15.333	-34.336	3/26/98 14:	:34 23.402	-2.905
3/28/98 10:08	13.069	-34.7885	3/26/98 14:	:35 23.326	-4.1
3/28/98 10:12	10.806	-27.0155	3/26/98 14:	:39 23.062	-3.2
3/28/98 10:16	8.4658	-27.7495	3/26/98 14:	:43 22.821	-2.14
3/28/98 10:20	6.1113	-19.7105	3/26/98 14	:47 22.506	-0.735
3/28/98 10:24	5.4029	-18.058	3/26/98 14:	:51 22.422	-0.555
3/28/98 10:28	2.9159	-6.677	3/26/98 14:	:55 22.393	-0.39
3/28/98 10:32	2.1692	-3.5305	3/26/98 14:	:59 22.359	-0.345
3/28/98 10:36	1.7913	-1.9195	3/26/98 15:	:03 22.311	-0.08
3/28/98 10:40	1.5805	-1.085	3/26/98 15:	:07 22.315	-0.08
3/28/98 10:44	1.4631	0.273	3/26/98 15:	:11 22.29	0.025
3/28/98 10:48	1.4074	0.4905	3/26/98 15:	:15 22.295	-0.11
3/28/98 10:52	1.3635	0.7565	3/26/98 15:	:19 22.299	-0.12
3/28/98 10:56	1.5177	-0.0075	3/26/98 15:	22.295	-0.245
3/28/98 11:00	1.5055	-0.0245	3/26/98 15:	22.273	-0.09
3/28/98 11:04	1.5148	-0.195	3/26/98 15:	:31 22.275	-0.08
3/28/98 11:08	1.5162	0.0975	3/26/98 15:	:35 22.246	0.085
3/28/98 11:12	← 1.5006	0.132	_ 3/26/98 15	:39 22.255	0.075
3/28/98 11:16	1.4758	5.391	3/26/98 15:	:43 22.259	-0.1
3/28/98 11:20	1.5357	14.479	3/26/98 15:	:47 22.263	0.09
3/28/98 11:24	1.527	24.905	3/26/98 15:	:51 22.27	-0.055
3/28/98 11:28	2.554	30.7915	3/26/98 15:	:55 22.239	0.07
3/28/98 11:32	4.4315	32.8275	3/26/98 15:	:59 22.281	-0.33
3/28/98 11:36	6.508	33.77	3/26/98 16:	:03 22.259	-0.435
3/28/98 11:40	8.7123	34.3285	3/26/98 16:	:07 22.253	4.55
3/28/98 11:44	10.997	34.515	3/26/98 16:	:11 22.215	3.32
3/28/98 11:48	13.262	34.695	3/27/98 8	:59 22.172	-15.19
3/28/98 11:52	15.578	33.77	3/27/98 9	:03 23.163	31.54
3/28/98 11:56	17.9	31.855	3/27/98 9	:07 22.879	-38.3
3/28/98 12:00	20.201	29.205	3/27/98 9	:11 19.134	-29.33
3/28/98 12:04	22.332	26.74	3/27/98 9	:15 16.85	<b>-28.705</b>
3/28/98 12:08	24.271	24.515	3/27/98 9	:19 15.219	-31.804
3/28/98 12:12	26.042	22.465	3/27/98 9	:23 13.268	3 -33.8435
3/28/98 12:16	27.68	20.265	3/27/98 9	:27 11.114	-29.748
3/28/98 12:20	29.174	18.49	3/27/98 9	:31 8.8582	2 -27.362
3/28/98 12:24	30.535	16.98	3/27/98 9		
3/28/98 12:28	31.733	15.615	3/27/98 9	:39 5.164	
3/28/98 12:32	32.872	14.375	3/27/98 9	:43 3.3858	
3/28/98 12:36	33.931	16.58	3/27/98 9		
3/28/98 12:40	34.856	28.97	3/27/98 9		
3/28/98 12:44	35.747	35.325	3/27/98 9	:55 2.0658	3 -1.2755

3/28/98 12:48	37.247	32.175	3/27/98 9:59	1.948	-1.002
3/28/98 12:52	40.65	17.105	3/27/98 10:03	1.8945	-0.857
3/28/98 12:56	42.812	7.45	3/27/98 10:07	1.8107	-0.55
3/28/98 13:00	43.682	3.67	3/27/98 10:11	1.7476	-1.2175
3/28/98 13:04	44.071	1.94	3/27/98 10:15	1.7231	-1.796
3/28/98 13:08	44.302	1.025	3/27/98 10:19	1.7007	-1.6635
3/28/98 13:12	44.416	0.635	3/27/98 10:23	1.5041	-0.472
3/28/98 13:16	44.459	0.62	3/27/98 10:27	1.3639	0.7065
3/28/98 13:20	44.507	0.4	3/27/98 10:31	1.368	0.9605
3/28/98 13:24	44.543	0.22	3/27/98 10:35	1.4097	1.096
3/28/98 13:28	44.583	-0.26	3/27/98 10:39	1.5052	0.4685
3/28/98 13:32	44.587	-0.385	3/27/98 10:43	1.5601	0.401
3/28/98 13:36	44.587	-0.315	3/27/98 10:47	1.6289	0.039
3/28/98 13:40	44.531	-0.055	3/27/98 10:51	1.5989	0.696
3/28/98 13:44	44.51	0.07	3/27/98 10:55	1.6403	6.0215
3/28/98 13:48	44.524	-0.675	3/27/98 10:59	1.6367	14.683
3/28/98 13:52	44.52	-8.735	3/27/98 11:03	1.7381	24.479
3/28/98 13:56	44.524	-18.99	3/27/98 11:07	2.8446	29.7405
3/28/98 14:00	44.389	-28.93	3/27/98 11:11	4.5733	32.3685
3/28/98 14:04	42.773	-32.095	3/27/98 11:15	6.6339	33.3405
3/28/98 14:08	40.726	-33.405	3/27/98 11:19	8.7927	33.9565
3/28/98 14:12	38.603	-34.385	3/27/98 11:23	11.047	34.185
3/28/98 14:16	36.354	-34.01	3/27/98 11:27	13.302	34.435
3/28/98 14:20	34.045	-28.43	3/27/98 11:31	15.584	34.65
3/28/98 14:24	31.726	-2.25	3/27/98 11:35	17.884	34.885
3/28/98 14:28	← 29.552	4.36	3/27/98 11:39	20.189	35.015
3/28/98 14:32	28.359	5.45	3/27/98 11:43	22.514	35.225
4/13/98 17:21	31.276	-16.195	3/27/98 11:47	24.861	35.045
4/13/98 17:25	30.424	-15.57	3/27/98 11:51	27.192	35.22
4/13/98 17:29	29.449	-19.005	3/27/98 11:55	29.559	34.985
4/13/98 17:33	28.037	-16.73	3/27/98 11:59	31.87	34.935
4/13/98 17:37	27.31	-15.095	3/27/98 12:03	34.236	34.18
4/13/98 17:41	25.648	-7.885	3/27/98 12:07	36.556	32.42.
4/13/98 17:45	24.691	-3.67	3/27/98 12:11	38.857	26.27
4/13/98 17:49	24.291	-1.8	3/27/98 12:15	41.072	18.01
4/13/98 17:53	24.071	-0.815	3/27/98 12:19	43.04	9.72
4/13/98 17:57	23.957	-0.465	3/27/98 12:23	44.111	5.23
4/13/98 18:01	23.931	-0.47	3/27/98 12:27	44.674	2.985
4/13/98 18:05	23.908	-0.41	3/27/98 12:31	44.984	1.775
4/13/98 18:09	23.864	-0.12	3/27/98 12:35	45.157	0.525
4/13/98 18:13	23.837	0.045	3/27/98 12:39	45.271	-0.32
4/13/98 18:17	23.826	0.15	3/27/98 12:43	45.339	-1.225
4/13/98 18:21	23.84	0.23	3/27/98 12:47	45.262	-1.395
4/13/98 18:25	23.846	0.14	3/27/98 12:51	45.207	-1.325
4/13/98 18:29	23.856	0.035	3/27/98 12:55	45.094	-0.96
4/13/98 18:33	23.886	-0.07	3/27/98 12:59	44.983	-6.59
4/13/98 18:37	23.874	0.055	3/27/98 13:03	44.942	-17.95
4/13/98 18:41	23.863	0.205	3/27/98 13:07	44.902	-31.42
4/13/98 18:45	23.872	-0.015	3/27/98 13:11	43.665	-39.24
			*·-···		

4/13/98 18:49	23.885	-0.035		3/27/98 13:15	41.352	-40.36
4/13/98 18:53	23.904	0.04		3/27/98 13:19	38.618	-38.52
4/13/98 18:57	23.869	4.67		3/27/98 13:23	35.817	-31.7
4/13/98 19:01	23.878	12.015		3/27/98 13:27	33.28	-28.56
4/13/98 19:05	23.912	20.38		3/27/98 13:31	30.914	-33.315
4/13/98 19:09	24.803	24.79		3/27/98 13:35	29.477	20.3
4/13/98 19:13	26.281	26.57		3/27/98 13:39	27.568	22.14
4/13/98 19:17	27.988	27.47		3/27/98 13:43	24.251	33.97
4/13/98 19:21	29.761	27.925		4/13/98 17:21	33.537	-19.705
4/13/98 19:25	31.595	28.22		4/13/98 17:25	31.996	-20.45
4/13/98 19:29	33.482	28.2		4/13/98 17:29	31.045	-19.05
4/13/98 19:33	35.346	28.275		4/13/98 17:33	29.596	-20.705
4/13/98 19:37	37.239	28.27		4/13/98 17:37	27.906	-15.49
4/13/98 19:41	39.122	28.3		4/13/98 17:41	27.235	-14.265
4/13/98 19:45	41.001	28.315		4/13/98 17:45	25.455	-6.355
4/13/98 19:49	42.893	28.31		4/13/98 17:49	24.808	-3.765
4/13/98 19:53	44.782	28.285		4/13/98 17:53	24.382	-2.16
4/13/98 19:57	46.664	28.285		4/13/98 17:57	24.184	-1.285
4/13/98 20:01	48.555	28.205		4/13/98 18:01	24.055	-0.88
4/13/98 20:05	50.439	28.01		4/13/98 18:05	23.95	-0.205
4/13/98 20:09	52.321	25.875		4/13/98 18:09	23.927	-0.125
4/13/98 20:13	54.196	23.66		4/13/98 18:13	23.879	0.04
4/13/98 20:17	56.041	17.915		4/13/98 18:17	23.909	-0.06
4/13/98 20:21	57.496	12.365		4/13/98 18:21	23.902	-0.08
4/13/98 20:25	58.928	6.345		4/13/98 18:25	23.887	0.04
4/13/98 20:29	59.624	3.33		4/13/98 18:29	23.897	0.035
4/13/98 20:33	59.969	1.8		4/13/98 18:33	23.886	0.035
4/13/98 20:37	60.197	0.875		4/13/98 18:37	23.895	0.055
4/13/98 20:41	60.29	0.5		4/13/98 18:41	23.904	0.1
4/13/98 20:45	60.329	0.495		4/13/98 18:45	23.893	0.19
4/13/98 20:49	60.372	0.14		4/13/98 18:49	23.906	-0.14
4/13/98 20:53	60.39	0.115		4/13/98 18:53	23.924	-0.575
4/13/98 20:57	60.428	0.005		4/13/98 18:57	23.931	<b>3.635</b> .
4/13/98 21:01	60.4	0.03		4/13/98 19:01	23.878	10.57
4/13/98 21:05	60.413	0.045		4/13/98 19:05	23.809	18.94
4/13/98 21:09	60.429	-0.03		4/13/98 19:09	24.658	23.565
4/13/98 21:13	60.406	0.065		4/13/98 19:13	25.992	26.075
4/13/98 21:17	60.422	0.085		4/13/98 19:17	27.597	27.19
4/13/98 21:21	60.423	0.08		4/13/98 19:21	29.371	27.645
4/13/98 21:25	60.419	0.1		4/13/98 19:25	31.207	27.84
4/13/98 21:29	60.439	-0.1		4/13/98 19:29	33.035	28.12
4/13/98 21:33	60.439	0		4/13/98 19:33	34.9	28.3
4/13/98 21:37	60.439	0.015		4/13/98 19:37	36.775	28.395
4/13/98 21:41	60.419	0.115	•	4/13/98 19:41	38.659	28.325
4/13/98 21:45	60.439	0.015		4/13/98 19:45	40.56	28.24
4/13/98 21:49	60.442	0.125		4/13/98 19:49	42.454	28.33
4/13/98 21:53	60.442	-0.075		4/13/98 19:53	44.324	28.41
4/13/98 21:57	60.442	0.015		4/13/98 19:57	46.208	28.505
4/13/98 22:01	60.467	-0.015		4/13/98 20:01	48.12	28.525
					•	

4/13/98 22:05	60.427	0.205		4/13/98 20:05	50.006	28.62
4/13/98 22:09	60.445	0.01		4/13/98 20:09	51.909	26.675
4/13/98 22:13	60.464	-0.07		4/13/98 20:13	53.825	24.74
4/13/98 22:17	60.468	0.035		4/13/98 20:17	55.73	18.89
4/13/98 22:21	60.447	0.14		4/13/98 20:21	57.244	13.625
4/13/98 22:25	60.45	0.105		4/13/98 20:25	58.773	7.12
4/13/98 22:29	60.475	-0.025		4/13/98 20:29	59.508	4.2
4/13/98 22:33	60.475	-0.12		4/13/98 20:33	59.969	2.38
4/13/98 22:37	60.471	-0.095	•	4/13/98 20:37	60.197	1.455
4/13/98 22:41	60.47	0.095		4/13/98 20:41	60.348	0.79
4/13/98 22:45	60.451	0.105		4/13/98 20:45	60.445	0.59
4/13/98 22:49	60.452	0.115		4/13/98 20:49	60.488	0.43
4/13/98 22:53	60.489	-0.17		4/13/98 20:53	60.506	0.4
4/13/98 22:57	60.472	-0.165		4/13/98 20:57	60.563	0.1
4/13/98 23:01	60.475	-0.085		4/13/98 21:01	60.574	0.03
4/13/98 23:05	60.455	0.03		4/13/98 21:05	60.586	0.145
4/13/98 23:09	60.439	0.015		4/13/98 21:09	60.583	0.065
4/13/98 23:13	60.458	0.11		4/13/98 21:13	60.58	0.16
4/13/98 23:17	60.461	-0.1		4/13/98 21:17	60.615	-0.015
4/13/98 23:21	60.442	0.095		4/13/98 21:21	60.596	-0.015
4/13/98 23:25	60.48	-0.115		4/13/98 21:25	60.612	0.005
4/13/98 23:29	60.441	0.175		4/13/98 21:29	60.612	0.005
4/13/98 23:33	60.461	0.095		4/13/98 21:33	60.593	0.1
4/13/98 23:37	60.457	0.055		4/13/98 21:37	60.613	0.115
4/13/98 23:41	60.476	-0.04		4/13/98 21:41	60.613	0.115
4/13/98 23:45	60.48	-0.105	* ***	4/13/98 21:45	60.613	0.115
4/13/98 23:49	60.468	0.125		4/13/98 21:49	60.636	-0.075
4/13/98 23:53	60.468	0.175		4/13/98 21:53	60.636	0.015
4/13/98 23:57	60.459	0.16		4/13/98 21:57	60.636	0.11
4/14/98 0:01	60.493	-0.085		4/13/98 22:01	60.621	0.085
4/14/98 0:05	60.503	-0.12		4/13/98 22:05	60.639	0.11
4/14/98 0:09	60.491	-0.04		4/13/98 22:09	60.658	-0.09
4/14/98 0:13	60.476	-0.045		4/13/98 22:13	60.638	0.215
4/14/98 0:17	60.479	-0.025		4/13/98 22:17	60.661	0.035
4/14/98 0:21	60.483	-2.64		4/13/98 22:21	60.64	0.235
4/14/98 0:25	60.467	-7.955		4/13/98 22:25	60.681	-0.185
4/14/98 0:29	60.474	-13.395		4/13/98 22:29	60.668	0.075
4/14/98 0:33	59.955	-15.965		4/13/98 22:33	60.687	-0.215
4/14/98 0:37	58.876	-15.235		4/13/98 22:37	60.644	0.195
4/14/98 0:41	57.795	-13.86		4/13/98 22:41	60.683	-0.005
4/14/98 0:45	56.762	-12.64		4/13/98 22:45	60.644	0.105
4/14/98 0:49	55.829	-12.35		4/13/98 22:49	60.683	-0.075
4/14/98 0:53	55.023	-11.735		4/13/98 22:53	60.682	0.025
4/14/98 0:57	54.234	-14.05		4/13/98 22:57	60.665	-0.07
4/14/98 1:01	53.359	-14.97		4/13/98 23:01	60.668	-0.085
4/14/98 1:05	52.676	-19.555		4/13/98 23:05	60.687	-0.065
4/14/98 1:09	51.424	-14.78		4/13/98 23:09	60.651	0.21
4/14/98 1:13	50.365	-11.28		4/13/98 23:13	60.651	0.21
4/14/98 1:17	48.765	<b>-4</b> .19		4/13/98 23:17	60.674	-0.1

4/14/98 1:21	48.468	-3.985	4/13/98 23:21	60.693	-0.295
4/14/98 1:25	48.109	-8.53	4/13/98 23:25	60.693	-0.215
4/14/98 1:29	47.927	-10.7	4/13/98 23:29	60.654	0.175
4/14/98 1:33	47.671	-17.375	4/13/98 23:33	60.634	0.195
4/14/98 1:37	46.403	-19.33	4/13/98 23:37	60.65	0.245
4/14/98 1:41	45.787	-24.85	4/13/98 23:41	60.689	-0.045
4/14/98 1:45	44.196	-26.03	4/13/98 23:45	60.673	0.09
4/14/98 1:49	42.537	-27.02	4/13/98 23:49	60.699	-0.065
4/14/98 1:53	40.817	-27.82	4/13/98 23:53	60.68	0.085
4/14/98 1:57	38.99	-28.23	4/13/98 23:57	60.691	-0.13
4/14/98 2:01	37.133	-28.515	4/14/98 0:01	60.686	0.01
4/14/98 2:05	35.253	-28.635	4/14/98 0:05	60.697	-0.125
4/14/98 2:09	33.344	-26.29	4/14/98 0:09	60.665	0.055
4/14/98 2:13	31.43	-24.16	4/14/98 0:13	60.688	-0.045
4/14/98 2:17	29.526	-21.695	4/14/98 0:17	60.672	0.075
4/14/98 2:21	28.086	-17.12	4/14/98 0:21	60.676	-3.99
4/14/98 2:25	26.598	-10.15	4/14/98 0:25	60.679	-9.985
4/14/98 2:29	25.187	-9.97	4/14/98 0:29	60.687	-17.375
4/14/98 2:33	24.662	-10.395	4/14/98 0:33	59.878	-22.1
4/14/98 2:37	24.568	-11.42	4/14/98 0:37	58.682	-25
4/14/98 2:41	23.193	-5.1	4/14/98 0:41	57.212	-26.89
4/14/98 2:45	22.583	-2.605	4/14/98 0:45	55.458	-27.4
4/14/98 2:49	22.284	-1.36	4/14/98 0:49	53.682	-27.86
4/14/98 2:53	22.173	-0.955	4/14/98 0:53	51.834	-28.31
4/14/98 2:57	22.062	-0.44	4/14/98 0:57	49.978	-28.65
4/14/98 3:01	22.012	-0.23	4/14/98 1:01	48.11	-28.965
4/14/98 3:05	21.982	-0.105	4/14/98 1:05	46.172	-28.805
4/14/98 3:09	21.974	0	4/14/98 1:09	44.248	-28.83
4/14/98 3:13	21.966	-0.025	4/14/98 1:13	42.317	-28.77
4/14/98 3:17	21.961	0.07	4/14/98 1:17	40.411	-28.57
4/14/98 3:21	21.974	-3.135	4/14/98 1:21	38.482	-28.67
4/14/98 3:25	21.961	-12.245	4/14/98 1:25	36.563	-28.975
4/14/98 3:29	21.975	-21.475	4/14/98 1:29	34.697	-29.375
4/14/98 3:33	21.347	-27.545	4/14/98 1:33	32,748	-27.445
4/14/98 3:37	19.512	-27.835	4/14/98 1:37	30.768	-25.815
4/14/98 3:41	17.68	-28.085	4/14/98 1:41	28.822	-22.395
4/14/98 3:45	15.838	-27.8	4/14/98 1:45	27.259	-17.585
4/14/98 3:49	13.945	-28.052	4/14/98 1:49	25.605	-10.995
4/14/98 3:53	12.063	-28.2735	4/14/98 1:53	24.343	-9.15
4/14/98 3:57	10.278	-29.1515	4/14/98 1:57	23.742	-7.505
4/14/98 4:01	8.3346	-28.8885	4/14/98 2:01	23.406	-6.545
4/14/98 4:05	6.4083	-28.2005	4/14/98 2:05	22.513	-2.72
4/14/98 4:09	4.4477	-28.1915	4/14/98 2:09	22.241	-1.48
4/14/98 4:13	2.5569	-28.6155	4/14/98 2:13	22.097	-0.9
4/14/98 4:17	0.76821	-29.2631	4/14/98 2:17	21.969	-0.4
4/14/98 4:21	-1.1906	-29.013	4/14/98 2:21	21.945	-0.42
4/14/98 4:25	-3.1662	-28.853	4/14/98 2:25	21.917	-0.13
4/14/98 4:29	-5.0844	-28.708	4/14/98 2:29	21.889	-0.13
4/14/98 4:33	-6.9932	-28.199	4/14/98 2:33	21.861	0.075
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4/14/98 4:37	-8.9368	-27.766		4/14/98 2:37	21.891	-0.32
4/14/98 4:41	-10.826	-28.155		4/14/98 2:41	21.863	-0.115
4/14/98 4:45	-12.633	-28.79		4/14/98 2:45	21.876	-0.113
4/14/98 4:49	-14.49	-29.24		4/14/98 2:49	21.827	-0.015
4/14/98 4:53	-16.457	-29.23		4/14/98 2:53	21.84	-0.225
4/14/98 4:57	-18.391	-28.18		4/14/98 2:57	21.854	-0.223
4/14/98 5:01	-20.338	-28.28		4/14/98 3:01	21.824	-0.125
4/14/98 5:05	-22.303	-21.145		4/14/98 3:05	21.795	0.105
4/14/98 5:09	-24.027	-23.47		4/14/98 3:09	21.793	-0.1
4/14/98 5:13	<b>-</b> 25.994	-18.065		4/14/98 3:13	21.799	-0.025
4/14/98 5:17	-26.532	-16.955		4/14/98 3:17	21.735	-0.025
4/14/98 5:21	-28.721	-7.705		4/14/98 3:21	21.808	-3.865
4/14/98 5:25	-29.607	-3.895		4/14/98 3:25	21.794	
4/14/98 5:29	-29.923	1.76		4/14/98 3:29	21.794	-12.875 -22.22
4/14/98 5:33	-30.262	3.09		4/14/98 3:33	21.009	-22.22 -27.99
4/14/98 5:37	-30.386	4.21		4/14/98 3:37		-27.99 -28.38
4/14/98 5:41	-29.571	-0.07		4/14/98 3:41	19.219	-20.36 -28.53
4/14/98 5:45	-29.57 i -29.644	0.325		4/14/98 3:45	17.365	
4/14/98 5:49	-29.5 <del>44</del> -29.544	-0.24		4/14/98 3:49	15.437	-27.6105
4/14/98 5:53	-29.5 <del>44</del> -29.585			4/14/98 3:53	13.543	-28.0785
4/14/98 5:57		-0.005 -0.12			11.659	-28.5145
4/14/98 6:01	-29.579 20.502	-0.12 0.095		4/14/98 3:57 4/14/98 4:01	9.9149	-29.4985
4/14/98 6:05	-29.592			4/14/98 4:05	7.9273	-29.241
	-29.586	0.07			5.9561	-28.5567
4/14/98 6:09	-29.603	-0.02		4/14/98 4:09	4.0152	-28.548
4/14/98 6:13 4/14/98 6:17	-29.573	-0.03		4/14/98 4:13	2.0791	-28.537
	-29.572	-0.08	A A STATE OF THE SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND SECOND	 4/14/98 4:17	0.24477	-29.0779
4/14/98 6:21	-29.607	0.025		4/14/98 4:21	-1.6944	-29.0475
4/14/98 6:25	-29.579	-0.205		4/14/98 4:25	-3.6283	-29.108
4/14/98 6:29 4/14/98 6:33	-29.588	-0.135		4/14/98 4:29	-5.5708 7.5000	-28.741
	-29.602	-0.15		4/14/98 4:33	-7.5039	-28.5705
4/14/98 6:37 4/14/98 6:41	-29.62	0.105		4/14/98 4:37	-9.4499 44.340	-27.8005
	-29.615	-0.1		4/14/98 4:41	-11.319	-28.3
4/14/98 6:45	-29.632	0.15		4/14/98 4:45	-13.218	-28.375 _.
4/14/98 6:49	-29.599	-0.08		4/14/98 4:49	-15.01	-29.05
4/14/98 6:53 4/14/98 6:57	-29.635	0.195		4/14/98 4:53	-16.979	-29.73
4/14/98 7:01	-29.602	-0.015		4/14/98 4:57	-18.893	-29.14
	-29.615	-0.365		4/14/98 5:01	-20.82	-29.825
4/14/98 7:05	-29.596	0.01		4/14/98 5:05	-22.925	-21.645
4/14/98 7:09	-29.605	0.45		4/14/98 5:09	-24.721	-24.1
4/14/98 7:13	-29.688	0.98		4/14/98 5:13	-26.785	-16.81
4/14/98 7:17	-29.594	0.18		4/14/98 5:17	-27.254	-16.28
4/14/98 7:21	-29.515	-0.15		4/14/98 5:21	-29.541	-5.955
4/14/98 7:25	-29.492	-0.215		4/14/98 5:25	-30.147	-3.43
4/14/98 7:29	-29.558	0.155		4/14/98 5:29	-30.51	3.635
4/14/98 7:33	-29.545	0.03		4/14/98 5:33	-30.732	3.56
4/14/98 7:37	-29.535	-0.075		4/14/98 5:37	-30.833	4.215
4/14/98 7:41	-29.527	-0.12		4/14/98 5:41	-29.783	-0.885
4/14/98 7:45	-29.539	-0.2		4/14/98 5:45	-30.02	0.445
4/14/98 7:49	-29.55	-0.075		4/14/98 5:49	-29.99	0.23

4/14/98 7:53	-29.551	0.055		4/14/98 5:53	-29.96	0.11
4/14/98 7:57	-29.579	-0.07		4/14/98 5:57	-29.931	0.115
4/14/98 8:01	-29.565	-0.285		4/14/98 6:01	-29.944	0.095
4/14/98 8:05	-29.54	-0.25		4/14/98 6:05	-29.938	0.07
4/14/98 8:09	-29.593	0.015		4/14/98 6:09	-29.908	-0.02
4/14/98 8:13	-29.622	0.145		4/14/98 6:13	-29.925	-0.145
4/14/98 8:17	-29.59	-0.035		4/14/98 6:17	-29.924	0.035
4/14/98 8:21	-29.59	0.175		4/14/98 6:21	-29.912	-0.095
4/14/98 8:25	-29.593	0.17		4/14/98 6:25	-29.954	-0.09
4/14/98 8:29	-29.597	0.195		4/14/98 6:29	-29.917	-0.25
4/14/98 8:33	-29.555	0.12		4/14/98 6:33	-29.931	-0.15
4/14/98 8:37	-29.559	0.07		4/14/98 6:37	-29.972	0.225
4/14/98 8:41	-29.558	-0.01		4/14/98 6:41	-29.967	0.015
4/14/98 8:45	-29.531	-0.095		4/14/98 6:45	-29.961	0.035
4/14/98 8:49	-29.545	0.13		4/14/98 6:49	-29.927	-0.08
4/14/98 8:53	-29.56	0.105		4/14/98 6:53	-29.964	0.08
4/14/98 8:57	-29.55	0.05		4/14/98 6:57	-29.954	-0.01
4/14/98 9:01	-29.519	-0.105		4/14/98 7:01	-29.943	-0.37
4/14/98 9:05	-29.539	-0.085		4/14/98 7:05	-29.948	-0.11
4/14/98 9:09	-29.54	-0.06		4/14/98 7:09	-29.956	0.21
4/14/98 9:13	-29.54	-0.06		4/14/98 7:13	-30.017	0.4
4/14/98 9:17	-29.556	0.16		4/14/98 7:17	-29.97	0.065
4/14/98 9:21	-29.552	2.15		4/14/98 7:21	-29.914	-0.15
4/14/98 9:25	-29.552	8.575		4/14/98 7:25	-29.937	0.02
4/14/98 9:29	-29.524	17.175		4/14/98 7:29	-29.957	0.035
4/14/98 9:33	←-29.122	24.05	9 · ·	4/14/98 7:33	-29.944	0.03
4/14/98 9:37	-27.837	26.69	-	4/14/98 7:37	-29.933	-0.195
4/14/98 9:41	-26.089	27.285		4/14/98 7:41	-29.95	-0.235
4/14/98 9:45	-24.312	27.845		4/14/98 7:45	-29.938	-0.2
4/14/98 9:49	-22.499	28.425		4/14/98 7:49	-29.972	-0.075
4/14/98 9:53	-20.632	28.695		4/14/98 7:53	-29.997	0.055
4/14/98 9:57	-18.743	28.67		4/14/98 7:57	-29.978	-0.07
4/14/98 10:01	-16.814	28.57		4/14/98 8:01	-29.987	-0.05
4/14/98 10:05	-14.893	28.381		4/14/98 8:05	-29.986	-0.015
4/14/98 10:09	-13.009	28.4305		4/14/98 8:09	-29.992	0.015
4/14/98 10:13	-11.1	28.301		4/14/98 8:13	-29.997	0.025
4/14/98 10:17	<i>-</i> 9.2168	28.2455		4/14/98 8:17	-29.989	-0.035
4/14/98 10:21	-7.3229	28.2075		4/14/98 8:21	-29.989	0.18
4/14/98 10:25	-5.4398	28.18445		4/14/98 8:25	-29.992	0.055
4/14/98 10:29	-3.5677	28.286		4/14/98 8:29	-29.996	0.075
4/14/98 10:33	-1.6814	28.385		4/14/98 8:33	-29.953	-0.115
4/14/98 10:37	0.19709	28.30805		4/14/98 8:37	-29.981	-0.05
4/14/98 10:41	2.0895	28.317		4/14/98 8:41	-29.981	-0.36
4/14/98 10:45	3.9956	28.3525		4/14/98 8:45	<i>-</i> 29.976	0.02
4/14/98 10:49	5.8587	28.5115		4/14/98 8:49	-29.991	-0.105
4/14/98 10:53	7.7529	28.6205		4/14/98 8:53	-30.053	0.225
4/14/98 10:57	9.6661	28.5195		4/14/98 8:57	-29.972	-0.07
4/14/98 11:01	11.561	28.435		4/14/98 9:01	-30.012	-0.105
4/14/98 11:05	13.477	28.3		4/14/98 9:05	-30.008	-0.085

4/14/98 11:09	15.37	28.24		4/14/98 9:09	-29.986	-0.055
4/14/98 11:13	17.248	27.185		4/14/98 9:13	-30.033	0.06
4/14/98 11:17	19.137	20.76		4/14/98 9:17	-30.025	0.04
4/14/98 11:21	21.018	12.195		4/14/98 9:21	-29.997	1.445
4/14/98 11:25	22.685	4.99		4/14/98 9:25	-30.021	8.465
4/14/98 11:29	23.289	1.255		4/14/98 9:29	-30.017	17.315
4/14/98 11:33	23.457	-1.65		4/14/98 9:33	-29.708	24.78
4/14/98 11:37	23.683	-3.305		4/14/98 9:37	-28.328	27.185
4/14/98 11:41	23.54	-2.825		4/14/98 9:41	-26.554	27.315
4/14/98 11:45	23.127	-0.975		4/14/98 9:45	-24.752	27.76
4/14/98 11:49	23.022	-0.46		4/14/98 9:49	-22.891	27.885
4/14/98 11:53	22.975	-0.235		4/14/98 9:53	-21.091	28.615
4/14/98 11:57	22.932	0.37		4/14/98 9:57	-19.2	28.705
4/14/98 12:01	22.93	5.625		4/14/98 10:01	-17.314	28.49
4/14/98 12:05	22.928	13.26		4/14/98 10:05	-15.368	28.4125
4/14/98 12:09	23.006	21.315		4/14/98 10:09	-13.459	28.4585
4/14/98 12:13	24.055	25.31		4/14/98 10:13	-11.616	28.7795
4/14/98 12:17	25.58	26.765		4/14/98 10:17	-9.6855	28.4965
4/14/98 12:21	27.269	27.63		4/14/98 10:21	-7.7673	28.6755
4/14/98 12:25	29.117	27.815		4/14/98 10:25	-5.8601	28.7576
4/14/98 12:29	30.933	28.105		4/14/98 10:29	-3.9862	29.2915
4/14/98 12:33	32.795	28.15		4/14/98 10:33	-2.0322	28.8405
4/14/98 12:37	34.68	28.245		4/14/98 10:37	-0.10858	29.0819
4/14/98 12:41	36.554	28.34		4/14/98 10:41	1.8721	28.331
4/14/98 12:45	38.425	28.295		4/14/98 10:45	3.7359	28.6895
4/14/98 12:49	40.329	28.355	3	4/14/98 10:49	5.7078	28.306
4/14/98 12:53	42.222	28.23		4/14/98 10:53	7.5383	28.5285
4/14/98 12:57	44.084	28.37		4/14/98 10:57	9.4738	28.316
4/14/98 13:01	46	28.3		4/14/98 11:01	11.369	28.45
4/14/98 13:05	47.868	28.24		4/14/98 11:05	13.244	28.52
4/14/98 13:09	49.758	28.13		4/14/98 11:09	15.137	28.47
4/14/98 13:13	51.66	28.075		4/14/98 11:13	17.059	26.57
4/14/98 13:17	53.516	26.975		4/14/98 11:17	18.948	18.59
4/14/98 13:21	55.384	25.565		4/14/98 11:21	20.831	10.845
4/14/98 13:25	57.275	18.805		4/14/98 11:25	22.373	3.855
4/14/98 13:29	58.911	11.165		4/14/98 11:29	22.666	0.53
4/14/98 13:33	60.497	3.675		4/14/98 11:33	23	-2.585
4/14/98 13:37	61.036	1.115		4/14/98 11:37	23.144	-3.73
4/14/98 13:41	61.144	0.435		4/14/98 11:41	22.772	<b>-</b> 2.105
4/14/98 13:45	61.232	-2.54		4/14/98 11:45	22.483	-0.875
4/14/98 13:49	61.259	-3.665		4/14/98 11:49	22.398	-0.355
4/14/98 13:53	61.231	-4.03		4/14/98 11:53	22.351	0.08
4/14/98 13:57	60.724	-1.715		4/14/98 11:57	22.308	1.83
4/14/98 14:01	60.526	-0.81		4/14/98 12:01	22.327	8.015
4/14/98 14:05	60.425	-0.39		4/14/98 12:05	22.367	15.55
4/14/98 14:09	60.381	-0.08		4/14/98 12:09	22.674	22.875
4/14/98 14:13	60.364	-0.115		4/14/98 12:13	23.93	25.625
4/14/98 14:17	60.347	-0.055		4/14/98 12:17	25.477	27.075
4/14/98 14:21	60.365	-0.09		4/14/98 12:21	27.249	27.625
	- 3.000	3.00				

4/14/98 14:25	60.341	-0.03		4/14/98 12:25	29.055	28.025
4/14/98 14:29	60.336	-0.065		4/14/98 12:29	30.892	28.21
4/14/98 14:33	60.347	-0.165		4/14/98 12:33	32.774	28.255
4/14/98 14:37	60.335	-0.07		4/14/98 12:37	34.66	28.345
4/14/98 14:41	60.323	0.14		4/14/98 12:41	36.534	28.44
4/14/98 14:45	60.314	0.04		4/14/98 12:45	38.425	28.395
4/14/98 14:49	60.321	0.065		4/14/98 12:49	40.329	28.455
4/14/98 14:53	60.351	-0.125		4/14/98 12:53	42.222	28.43
4/14/98 14:57	60.322	0.095		4/14/98 12:57	44.104	28.465
4/14/98 15:01	60.334	0.075		4/14/98 13:01	46.02	28.495
4/14/98 15:05	60.326	-0.02		4/14/98 13:05	47.908	28.53
4/14/98 15:09	60.341	-0.06		4/14/98 13:09	49.797	28.715
4/14/98 15:13	60.349	0.05		4/14/98 13:13	51.719	28.755
4/14/98 15:17	60.322	0.05		4/14/98 13:17	53.614	26.97
4/14/98 15:21	60.329	0.19		4/14/98 13:21	55.54	25.555
4/14/98 15:25	60.359	0.16		4/14/98 13:25	57.47	16.675
4/14/98 15:29	60.332	0.175		4/14/98 13:29	59.008	7.01
4/14/98 15:33	60.367	-0.1		4/14/98 13:33	60.651	-1.63
4/14/98 15:37	60.391	-0.285		4/14/98 13:37	60.805	-2.655
4/14/98 15:41	60.367	-0.035		4/14/98 13:41	60.41	-0.82
4/14/98 15:45	60.347	0.005		4/14/98 13:45	60.325	-0.32
4/14/98 15:49	60.334	0.105		4/14/98 13:49	60.274	-0.38
4/14/98 15:53	60.36	-0.07		4/14/98 13:53	60.246	-0.265
4/14/98 15:57	60.348	0.06		4/14/98 13:57	60.261	-0.265
4/14/98 16:01	60.355	. 0		4/14/98 14:01	60.198	0.06
4/14/98 16:05	60.346	0.1	e e de	4/14/98 14:05	60.193	-0.1
4/14/98 16:09	60.36	-0.035		4/14/98 14:09	60.208	-0.18
4/14/98 16:13	60.355	-0.07		4/14/98 14:13	60.21	-0.12
4/14/98 16:17	60.366	-0.13		4/14/98 14:17	60.173	0.04
4/14/98 16:21	60.353	-0.025		4/14/98 14:21	60.172	0.2
4/14/98 16:25	60.341	-0.02		4/14/98 14:25	60.186	0.065
4/14/98 16:29	60.34	0.005		4/14/98 14:29	60.181	0.13
4/14/98 16:33	60.348	0.065		4/14/98 14:33	60.212	0.025
4/14/98 16:37	60.337	0.14		4/14/98 14:37	60.199	-0.16
4/14/98 16:41	60.341	0.14		4/14/98 14:41	60.207	-0.05
4/14/98 16:45	60.361	-0.055		4/14/98 14:45	60.217	-0.055
4/14/98 16:49	60.365	-0.075		4/14/98 14:49	60.167	0.16
4/14/98 16:53	60.369	-0.115		4/14/98 14:53	60.197	-0.125
4/14/98 16:57	60.35	0.105		4/14/98 14:57	60.206	0
4/14/98 17:01	60.35	-0.19		4/14/98 15:01	60.199	-0.02
4/14/98 17:05	60.346	-0.06		4/14/98 15:05	60.172	0.17
4/14/98 17:09	60.371	-0.17		4/14/98 15:09	60.206	0.135
4/14/98 17:13	60.312	0.215		4/14/98 15:13	60.195	0.05
4/14/98 17:17	60.334	0.105		4/14/98 15:17	60.206	0.05
4/14/98 17:21	60.337	0.105	•	4/14/98 15:21	60.233	-0.005
4/14/98 17:25	60.355	<i>-</i> 2.96		4/14/98 15:25	60.205	0.16
4/14/98 17:29	60.355	-8.97		4/14/98 15:29	60.216	0.08
4/14/98 17:33	60.358	-17		4/14/98 15:33	60.232	-0.1
4/14/98 17:37	59.763	-22.975		4/14/98 15:37	60.237	-0.095

4/14/98 17:41	58.561	-26.125		4/14/98 15:41	60.232	-0.035
4/14/98 17:45	56.958	-27.495		4/14/98 15:45	60.212	0.1
4/14/98 17:49	55.168	-28.045		4/14/98 15:49	60.218	0.105
4/14/98 17:53	53.336	-28.34		4/14/98 15:53	60.225	-0.07
4/14/98 17:57	51.459	-28.285		4/14/98 15:57	60.232	-0.035
4/14/98 18:01	49.559	-28.245		4/14/98 16:01	60.239	-0.095
4/14/98 18:05	47.668	-28.585	•	4/14/98 16:05	60.211	0
4/14/98 18:09	45.802	-28.66		4/14/98 16:09	60.225	-0.13
4/14/98 18:13	43.91	-28.81		4/14/98 16:13	60.22	0.025
4/14/98 18:17	41.951	-28.335		4/14/98 16:17	60.211	-0.03
4/14/98 18:21	40.07	-28.61		4/14/98 16:21	60.199	0.165
4/14/98 18:25	38.148	-28.575		4/14/98 16:25	60.225	-0.115
4/14/98 18:29	36.284	-28.97		4/14/98 16:29	60.205	-0.09
4/14/98 18:33	34.348	-28.96		4/14/98 16:33	60.232	-0.03
4/14/98 18:37	32.433	-24.745		4/14/98 16:37	60.202	0.14
4/14/98 18:41	30.49	-23.915		4/14/98 16:41	60.187	0.135
4/14/98 18:45	28.556	-19.035		4/14/98 16:45	60.226	0.04
4/14/98 18:49	27.484	-15.975		4/14/98 16:49	60.23	0.02
4/14/98 18:53	25.707	-8.165		4/14/98 16:53	60.214	0.18
4/14/98 18:57	24.749	-3.845		4/14/98 16:57	60.234	-0.09
4/14/98 19:01	24.289	-1.835		4/14/98 17:01	60.234	0
4/14/98 19:05	24.074	-0.815		4/14/98 17:05	60.25	0.03
4/14/98 19:09	23.98	-0.375		4/14/98 17:09	60.216	0.025
4/14/98 19:13	23.922	-0.245		4/14/98 17:13	60.234	-0.07
4/14/98 19:17	23.911	-0.245	,	4/14/98 17:17	60.256	-0.085
4/14/98 19:21	<b>23.905</b>	-0.185	- 1 - m	4/14/98 17:21	60.221	0.01
4/14/98 19:25	23.873	0.02		4/14/98 17:25	60.22	-3.74
4/14/98 19:29	23.862	0.125		4/14/98 17:29	60.239	-10.52
4/14/98 19:33	23.868	-0.065		4/14/98 17:33	60.223	-18.85
4/14/98 19:37	23.877	-2.45		4/14/98 17:37	59.472	-24.25
4/14/98 19:41	23.887	-11.77		4/14/98 17:41	58.135	-26.93
4/14/98 19:45	23.855	-21.105		4/14/98 17:45	56.453	-28.115
4/14/98 19:49	23.387	-28.3		4/14/98 17:49	54.622	-28.175.
4/14/98 19:53	21.533	-28.39		4/14/98 17:53	52.749	-28.375
4/14/98 19:57	19.634	-28.315		4/14/98 17:57	50.83	-28.215
4/14/98 20:01	17.727	-28.345		4/14/98 18:01	48.987	-28.57
4/14/98 20:05	15.855	-28.5		4/14/98 18:05	47.074	-28.515
4/14/98 20:09	13.971	-28.7655		4/14/98 18:09	45.187	-28.695
4/14/98 20:13	12.058	-28.584		4/14/98 18:13	43.273	-28.645
4/14/98 20:17	10.155	-28.735		4/14/98 18:17	41.371	-28.675
4/14/98 20:21	8.2179	-28.507		4/14/98 18:21	39.448	-28.545
4/14/98 20:25	6.3412	-28.7524		4/14/98 18:25	37.544 35.636	-28.815
4/14/98 20:29	4.408	-29.1975		4/14/98 18:29	35.636 33.730	-28.695
4/14/98 20:33	2.5165	-28.799		4/14/98 18:33	33.739 34.794	-28.79
4/14/98 20:37	0.59073	-28.5092		4/14/98 18:37	31.781 29.897	-24.575 -24.15
4/14/98 20:41	-1.4315	-27.668		4/14/98 18:41	29.69 <i>1</i> 27.981	-24.15 -18.44
4/14/98 20:45	-3.2433	-28.0315		4/14/98 18:45 4/14/98 18:49	26.866	-16. <del>44</del> -14.75
4/14/98 20:49	-5.1111 6.0651	-28.0445		4/14/98 18:53	25.067	-14.75 -7.555
4/14/98 20:53	-6.9651	-28.4145		4/14/80 10.03	20.001	-1.000

4/14/98 20:57	-8.8496	-28.687			4/14/98 18:57	24.293	-4.365
4/14/98 21:01	-10.72	-28.945			4/14/98 19:01	23.916	<i>-</i> 2.355
4/14/98 21:05	-12.648	-28.87			4/14/98 19:05	23.556	-0.61
4/14/98 21:09	-14.587	-28.785			4/14/98 19:09	23.42	0.04
4/14/98 21:13	-16.509	-28.855			4/14/98 19:13	23.445	-0.14
4/14/98 21:17	-18.422	-28.785			4/14/98 19:17	23.434	-0.035
4/14/98 21:21	-20.344	-28.64			4/14/98 19:21	23.428	0.125
4/14/98 21:25	-22.28	-21.735			4/14/98 19:25	23.417	0.02
4/14/98 21:29	-24.179	-22.02			4/14/98 19:29	23.427	0.015
4/14/98 21:33	-26.072	-18.16			4/14/98 19:33	23.453	-0.48
4/14/98 21:37	-26.627	-17.95			4/14/98 19:37	23.421	-0.38
4/14/98 21:41	-28.583	-9.145			4/14/98 19:41	23.43	-7.09
4/14/98 21:45	-29.704	-4.35			4/14/98 19:45	23.357	-16.21
4/14/98 21:49	-30.217	-1.875			4/14/98 19:49	23.345	-25.675
4/14/98 21:53	-30.412	-0.985			4/14/98 19:53	22.012	-28.575
4/14/98 21:57	-30.574	-0.38	•		4/14/98 19:57	20.115	-28.71
4/14/98 22:01	-30.592	-0.24			4/14/98 20:01	18.21	-28.845
4/14/98 22:05	-30.609	-0.22			4/14/98 20:05	16.297	-28.79
4/14/98 22:09	-30.65	0.09			4/14/98 20:09	14.373	-28.633
4/14/98 22:13	-30.64	-0.48			4/14/98 20:13	12.441	-28.24
4/14/98 22:17	-30.653	0.1			4/14/98 20:17	10.539	-28.3865
4/14/98 22:21	-30.632	0.16			4/14/98 20:21	8.6464	-28.588
4/14/98 22:25	-30.736	0.75			4/14/98 20:25	6.793	-29.1586
4/14/98 22:29	-30.633	0.185			4/14/98 20:29	4.8617	-29.1669
4/14/98 22:33	-30.6	0.14			4/14/98 20:33	2.9288	-28.4415
4/14/98 22:37	← -30.586	-0.085	- 1	_	4/14/98 20:37	0.96128	-28.1539
4/14/98 22:41	-30.596	-0.055			4/14/98 20:41	-0.97167	-27.7492
4/14/98 22:45	-30.572	-0.31			4/14/98 20:45	-2.7595	-28.445
4/14/98 22:49	-30.603	-0.195			4/14/98 20:49	-4.6695	-28.3525
4/14/98 22:53	-30.607	-0.2			4/14/98 20:53	-6.5215	-28.7225
4/14/98 22:57	-30.634	-0.18			4/14/98 20:57	-8.4485	-28.8825
4/14/98 23:01	-30.642	-0.045			4/14/98 21:01	-10.34	-29.37
4/14/98 23:05	-30.647	0.08			4/14/98 21:05	-12.266	-29.41 _.
4/14/98 23:09	-30.67	0.17			4/14/98 21:09	-14.225	-29.105
4/14/98 23:13	-30.651	0.075			4/14/98 21:13	-16.214	-28.945
4/14/98 23:17	-30.631	0.075			4/14/98 21:17	-18.148	-28.765
4/14/98 23:21	-30.636	-0.04			4/14/98 21:21	-20.046	-28.735
4/14/98 23:25	-30.636	0.035			4/14/98 21:25	-22.003	-26.38
4/14/98 23:29	-30.616	-0.23			4/14/98 21:29	-23.901	-18.97
4/14/98 23:33	-30.644	0.01			4/14/98 21:33	-25.793	-20.845
4/14/98 23:37	-30.629	-0.11			4/14/98 21:37	-27.279	-16.215
4/14/98 23:41	-30.662	0.01	•		4/14/98 21:41	-27.695	-15.58
4/14/98 23:45	-30.642	0.005			4/14/98 21:45	-29.962	-4.71
4/14/98 23:49	-30.651	0.145			4/14/98 21:49	-30.522	-1.995
4/14/98 23:53	-30.66	-0.065			4/14/98 21:53	-30.811	-0.99
4/14/98 23:57	-30.641	-0.065			4/14/98 21:57	-30.904	-0.495
4/15/98 0:01	-30.622	-0.18			4/14/98 22:01	-30.921	-0.475
4/15/98 0:05	-30.673	-0.035			4/14/98 22:05	-31.009	0.015
4/15/98 0:09	-30.654	-0.65			4/14/98 22:09	-31.003	-0.025

4/15/98 0:13	-30.658	-0.33	4/14/98 22:13	-31.016	-0.25
4/15/98 0:17	-30.68	0.225	4/14/98 22:17	-31.006	-0.015
4/15/98 0:21	-30.784	0.7	4/14/98 22:21	-31.008	0.16
4/15/98 0:25	-30.724	0.705	4/14/98 22:25	-31.066	0.405
4/15/98 0:29	-30.635	0.1	4/14/98 22:29	-31.009	0.415
4/15/98 0:33	-30.644	0.305	4/14/98 22:33	-30.976	0.14
4/15/98 0:37	-30.583	-0.275	4/14/98 22:37	-30.985	0.38
4/15/98 0:41	-30.615	-0.125	4/14/98 22:41	-30.926	0.07
4/15/98 0:45	-30.583	-0.34	4/14/98 22:45	-30.948	0.16
4/15/98 0:49	-30.638	-0.08	4/14/98 22:49	-30.909	-0.08
4/15/98 0:53	-30.64	-0.09	4/14/98 22:53	-30.912	0.035
4/15/98 0:57	-30.651	-0.19	4/14/98 22:57	-30.916	-0.065
4/15/98 1:01	-30.654	-0.1	4/14/98 23:01	-30.925	0.08
4/15/98 1:05	-30.658	0.015	4/14/98 23:05	-30.905	-0.045
4/15/98 1:09	-30.689	0.01	4/14/98 23:09	-30.929	0.175
4/15/98 1:13	-30.674	0.15	4/14/98 23:13	-30.909	-0.045
4/15/98 1:17	-30.655	-0.085	4/14/98 23:17	-30.914	-0.04
4/15/98 1:21	-30.687	0.035	4/14/98 23:21	-30.894	-0.16
4/15/98 1:25	-30.644	0.01	4/14/98 23:25	-30.918	-0.32
4/15/98 1:29	-30.672	0.01	4/14/98 23:29	-30.922	-0.11
4/15/98 1:33	-30.68	-0.23	4/14/98 23:33	-30.926	0.005
4/15/98 1:37	-30.642	-0.11	4/14/98 23:37	-30.982	0.245
4/15/98 1:41	-30.67	5.035	4/14/98 23:41	-30.944	0.125
4/15/98 1:45	-30.726	13.7	4/14/98 23:45	-30.925	-0.105
4/15/98 1:49	-30.664	22.55	4/14/98 23:49	-30.933	0.03
4/15/98 1:53	< <b>-29.663</b>	26.665	4/14/98 23:53	-30.919	-0.065
4/15/98 1:57	-27.986		4/14/98 23:57	-30.946	0.17
4/15/98 2:01	-26.154	27.715	4/15/98 0:01	-30.927	0.05
4/15/98 2:05	-24.33	27.84	4/15/98 0:05	-30.932	-0.505
4/15/98 2:09	-22.487	28.19	4/15/98 0:09	-30.912	-0.42
4/15/98 2:13	-20.611	28.425	4/15/98 0:13	-30.917	-0.325
4/15/98 2:17	-18.762	28.625	4/15/98 0:17	-31.033	0.58
4/15/98 2:21	-16.849	28.645	4/15/98 0:21	-30.996	0.35
4/15/98 2:25	-14.926	28.438	4/15/98 0:25	-30.982	0.47
4/15/98 2:29	-13.037	28.23	4/15/98 0:29	-30.917	0.095
4/15/98 2:33	-11.12	28.195	4/15/98 0:33	-30.926	0.185
4/15/98 2:37	-9.2384	28.1845	4/15/98 0:37	-30.888	-0.04
4/15/98 2:41	-7.391	28.5235	4/15/98 0:41	-30.898	-0.12
4/15/98 2:45	-5.481	28.28955	4/15/98 0:45	-30.889	-0.1
4/15/98 2:49	-3.6015	28.386	4/15/98 0:49	-30.896	-0.085
4/15/98 2:53	-1.6863	28.263	4/15/98 0:53	-30.922	0.03
4/15/98 2:57	0.17691	28.36045	4/15/98 0:57	-30.909	-0.08
4/15/98 3:01	2.0757	28.367	4/15/98 1:01	-30.913	-0.1
4/15/98 3:05	3.9663	28.355	4/15/98 1:05	-30.916	0.13
4/15/98 3:09	5.849	28.43	4/15/98 1:09	-30.925	0.015
4/15/98 3:13	7.7491	28.2945	4/15/98 1:13	-30.933	0.15
4/15/98 3:17	9.6373	28.2785	4/15/98 1:17	-30.89	-0.2
4/15/98 3:21	11.535	28.205	4/15/98 1:21	-30.922	-0.085
4/15/98 3:25	13.408	28.535	4/15/98 1:25	-30.903	-0.105

4/15/98 3:29	15.293	27.19	4/15/98 1:29	-30.93	0.005
4/15/98 3:33	17.176	19.955	4/15/98 1:33	-30.939	-0.345
4/15/98 3:37	19.115	11.36	4/15/98 1:37	-30.924	0.01
4/15/98 3:41	20.731	4.295	4/15/98 1:41	-30.929	5.745
4/15/98 3:45	21.167	2.485	4/15/98 1:45	-31.008	15.11
4/15/98 3:49	21.387	1.425	4/15/98 1:49	-30.922	23.955
4/15/98 3:53	21.59	0.43	4/15/98 1:53	-29.78	27.595
4/15/98 3:57	21.664	0.285	4/15/98 1:57	-27.986	27.84
4/15/98 4:01	21.672	0.39	4/15/98 2:01	-26.131	27.83
4/15/98 4:05	21.676	0.33	4/15/98 2:05	-24.261	27.95
4/15/98 4:09	21.721	0.12	4/15/98 2:09	-22.418	28.3
4/15/98 4:13	21.75	4.045	4/15/98 2:13	-20.565	28.645
4/15/98 4:17	21.742	11.26	4/15/98 2:17	-18.671	28.735
4/15/98 4:21	21.745	19.555	4/15/98 2:21	-16.758	28.75
4/15/98 4:25	22.559	24.57	4/15/98 2:25	-14.836	28.657
4/15/98 4:29	23.994	26.65	4/15/98 2:29	-12.924	28.4425
4/15/98 4:33	25.656	27.73	4/15/98 2:33	-11.008	28.409
4/15/98 4:37	27.473	27.985	4/15/98 2:37	-9.1046	28.286
4/15/98 4:41	29.324	28.075	4/15/98 2:41	-7.2355	28.4035
4/15/98 4:45	31.202	28.085	4/15/98 2:45	-5.3262	28.49755
4/15/98 4:49	33.07	28.29	4/15/98 2:49	-3.4474	28.4845
4/15/98 4:53	34.939	28.345	4/15/98 2:53	-1.5548	28.471
4/15/98 4:57	36.819	28.405	4/15/98 2:57	0.37331	28.45545
4/15/98 5:01	38.728	28.31	4/15/98 3:01	2.2495	28.4635
4/15/98 5:05	40.608	28.36	4/15/98 3:05	4.1394	28.558
4/15/98 5:09	42.5	28.3	 4/15/98 3:09	6.0644	28.523
4/15/98 5:13	44.39	28.315	 4/15/98 3:13	7.9422	28.599
4/15/98 5:17	46.28	28.42	4/15/98 3:17	9.851	28.475
4/15/98 5:21	48.16	28.33	4/15/98 3:21	11.769	28.4
4/15/98 5:25	50.053	28.13	4/15/98 3:25	13.662	28.73
4/15/98 5:29	51.964	28.12	4/15/98 3:29	15.546	25.09
4/15/98 5:33	53.826	26.385	4/15/98 3:33	17.449	16.92
4/15/98 5:37	55.679	24.865	4/15/98 3:37	19.408	8.23
4/15/98 5:41	57.588	19.33	4/15/98 3:41	20.564	3.15
4/15/98 5:45	59.103	11.435	4/15/98 3:45	20.833	1.97
4/15/98 5:49	60.652	0.715	4/15/98 3:49	21.054	1.005
4/15/98 5:53	61.454	-4.535	4/15/98 3:53	21.194	0.43
4/15/98 5:57	61.39	-4.84	4/15/98 3:57	21.227	0.39
4/15/98 6:01	60.795	-2.215	4/15/98 4:01	21.255	0.185
4/15/98 6:05	60.547	-1.055	4/15/98 4:05	21.28	0.125
4/15/98 6:09	60.422	-0.53	4/15/98 4:09	21.305	0.115
4/15/98 6:13	60.352	-0.3	4/15/98 4:13	21.292	4.36
4/15/98 6:17	60.336	-0.02	4/15/98 4:17	21.305	11.68
4/15/98 6:21	60.316	-0.035	4/15/98 4:21	21.328	19.985
4/15/98 6:25	60.292	0.185	4/15/98 4:25	22.164	24.9
4/15/98 6:29	60.332	-0.015	4/15/98 4:29	23.641	26.88
4/15/98 6:33	60.309	0.025	4/15/98 4:33	25.325	27.855
4/15/98 6:37	60.329	-0.13	4/15/98 4:37	27.144	28.205
4/15/98 6:41	60.329	-0.085	4/15/98 4:41	29.017	28.29

4/15/98 6:45	60.314	0.1	4/15/98 4:45	30.896	28.4
4/15/98 6:49	60.303	0.005	4/15/98 4:49	32.785	28.51
4/15/98 6:53	60.312	-0.075	4/15/98 4:53	34.675	28.46
4/15/98 6:57	60.334	-0.13	4/15/98 4:57	36.576	28.52
4/15/98 7:01	60.304	0.025	4/15/98 5:01	38.487	28.32
4/15/98 7:05	60.297	0.020	4/15/98 5:05	40.367	28.575
4/15/98 7:09	60.308	0.005	4/15/98 5:09	42.28	28.51
4/15/98 7:13	60.309	0.003	4/15/98 5:13	44.151	28.525
4/15/98 7:17	60.317	0.015	4/15/98 5:17	46.082	28.525
4/15/98 7:21	60.309	0.013	4/15/98 5:21	47.982	28.635
4/15/98 7:25	60.311	-0.04	4/15/98 5:25	49.856	28.825
4/15/98 7:29	60.32	-0.03	4/15/98 5:29	51.787	28.81
4/15/98 7:33	60.325	-0.05	4/15/98 5:33	53.709	26.97
4/15/98 7:37	60.303	0.085	4/15/98 5:37	55.621	25.635
4/15/98 7:41	60.314	0.005	4/15/98 5:41	57.549	19.525
4/15/98 7:45	60.306	0.105	4/15/98 5:45	59.103	11.145
4/15/98 7:49	60.32	0.025	4/15/98 5:49	60.748	-0.73
		-0.17	4/15/98 5:53	61.454	-0.73 -5.405
4/15/98 7:53	60.335		4/15/98 5:57	61.332	-5.42
4/15/98 7:57	60.311 60.329	0.085 -0.11	4/15/98 6:01	60.602	-2.025
4/15/98 8:01			4/15/98 6:05	60.373	-1.055
4/15/98 8:05	60.301	0.11	4/15/98 6:09	60.248	-0.43
4/15/98 8:09	60.328	-0.065	4/15/98 6:13	60.197	-0.43
4/15/98 8:13	60.307	0.03	4/15/98 6:17	60.162	-0.02
4/15/98 8:17	60.323	-0.11	4/15/98 6:21	60.162	-0.02
4/15/98 8:21	60.315	-0.02	4/15/98 6:25	60.137	0.095
4/15/98 8:25	← 60.313	-0.035	 4/ 10/90 0,20	00.137	
A IA E IOO 0.20	60.204	0.00E	A/45/09 6:20	60 158	_0 015
4/15/98 8:29	60.301	0.095	4/15/98 6:29	60.158 60.136	-0.015 -0.075
4/15/98 8:33	60.311	0.08	4/15/98 6:33	60.136	-0.075
4/15/98 8:33 4/15/98 8:37	60.311 60.306	0.08 0.105	4/15/98 6:33 4/15/98 6:37	60.136 60.156	-0.075 0.06
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41	60.311 60.306 60.32	0.08 0.105 -0.08	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41	60.136 60.156 60.155	-0.075 0.06 -0.085
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45	60.311 60.306 60.32 60.327	0.08 0.105 -0.08 -0.035	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45	60.136 60.156 60.155 60.121	-0.075 0.06 -0.085 0
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49	60.311 60.306 60.32 60.327 60.327	0.08 0.105 -0.08 -0.035 -0.15	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:49	60.136 60.156 60.155 60.121 60.168	-0.075 0.06 -0.085 0 -0.285
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49 4/15/98 8:53	60.311 60.306 60.32 60.327 60.327 60.304	0.08 0.105 -0.08 -0.035 -0.15 0.045	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:49 4/15/98 6:53	60.136 60.156 60.155 60.121 60.168 60.138	-0.075 0.06 -0.085 0 -0.285 0.02.
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49 4/15/98 8:53 4/15/98 8:57	60.311 60.306 60.32 60.327 60.327 60.304 60.32	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:49 4/15/98 6:53 4/15/98 6:57	60.136 60.156 60.155 60.121 60.168 60.138	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:49 4/15/98 6:53 4/15/98 7:01	60.136 60.156 60.155 60.121 60.168 60.138 60.121 60.111	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49 4/15/98 8:53 4/15/98 9:01 4/15/98 9:05	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:49 4/15/98 6:53 4/15/98 7:01 4/15/98 7:05	60.136 60.156 60.155 60.121 60.168 60.138 60.121 60.111	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49 4/15/98 8:53 4/15/98 9:01 4/15/98 9:05 4/15/98 9:09	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:49 4/15/98 6:53 4/15/98 7:01 4/15/98 7:05 4/15/98 7:09	60.136 60.156 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09 0.005
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01 4/15/98 9:05 4/15/98 9:09 4/15/98 9:13	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:13	60.136 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115 60.135	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09 0.005 -0.085
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01 4/15/98 9:05 4/15/98 9:13 4/15/98 9:13	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.316	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:09 4/15/98 7:13 4/15/98 7:17	60.136 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115 60.135 60.124	-0.075 0.06 -0.085 0 -0.285 0.02 -0.03 0.12 -0.09 0.005 -0.085
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01 4/15/98 9:05 4/15/98 9:09 4/15/98 9:13 4/15/98 9:17 4/15/98 9:21	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.339	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:09 4/15/98 7:13 4/15/98 7:17 4/15/98 7:21	60.136 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115 60.135 60.124 60.116	-0.075 0.06 -0.085 0 -0.285 0.02 -0.03 0.12 -0.09 0.005 -0.085 -0.085
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:49 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01 4/15/98 9:05 4/15/98 9:09 4/15/98 9:13 4/15/98 9:17 4/15/98 9:21 4/15/98 9:25	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.339 60.339	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09 0.14	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:09 4/15/98 7:13 4/15/98 7:17 4/15/98 7:21 4/15/98 7:25	60.136 60.156 60.155 60.121 60.168 60.121 60.111 60.142 60.115 60.135 60.124 60.116 60.118	-0.075 0.06 -0.085 0 -0.285 0.02 -0.03 0.12 -0.09 0.005 -0.085 -0.085 -0.115 -0.14
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01 4/15/98 9:05 4/15/98 9:09 4/15/98 9:13 4/15/98 9:17 4/15/98 9:25 4/15/98 9:25 4/15/98 9:29	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.339 60.339 60.304 60.323	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09 0.14 -0.025	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:09 4/15/98 7:13 4/15/98 7:21 4/15/98 7:25 4/15/98 7:25 4/15/98 7:29	60.136 60.156 60.155 60.121 60.168 60.121 60.111 60.142 60.115 60.135 60.124 60.116 60.118 60.107	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09 0.005 -0.085 -0.085 -0.115 -0.14 -0.125
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01 4/15/98 9:05 4/15/98 9:05 4/15/98 9:13 4/15/98 9:17 4/15/98 9:21 4/15/98 9:25 4/15/98 9:29 4/15/98 9:33	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.316 60.339 60.304 60.323 60.357	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09 0.14 -0.025 -0.18	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:49 4/15/98 6:53 4/15/98 7:01 4/15/98 7:05 4/15/98 7:05 4/15/98 7:13 4/15/98 7:17 4/15/98 7:21 4/15/98 7:25 4/15/98 7:29 4/15/98 7:33	60.136 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115 60.135 60.124 60.116 60.118 60.107 60.093	-0.075 0.06 -0.085 0 -0.285 0.02 -0.03 0.12 -0.09 0.005 -0.085 -0.085 -0.115 -0.14 -0.125 -0.095
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01 4/15/98 9:05 4/15/98 9:05 4/15/98 9:13 4/15/98 9:17 4/15/98 9:21 4/15/98 9:25 4/15/98 9:29 4/15/98 9:33 4/15/98 9:37	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.339 60.304 60.323 60.323 60.357 60.332	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09 0.14 -0.025 -0.18 -0.04	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:05 4/15/98 7:13 4/15/98 7:17 4/15/98 7:21 4/15/98 7:25 4/15/98 7:29 4/15/98 7:33 4/15/98 7:33	60.136 60.156 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115 60.135 60.124 60.116 60.118 60.107 60.093 60.09	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09 0.005 -0.085 -0.085 -0.115 -0.14 -0.125 -0.095 0.09
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:53 4/15/98 8:53 4/15/98 9:01 4/15/98 9:05 4/15/98 9:05 4/15/98 9:13 4/15/98 9:17 4/15/98 9:21 4/15/98 9:25 4/15/98 9:25 4/15/98 9:33 4/15/98 9:37 4/15/98 9:41	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.316 60.339 60.304 60.323 60.357 60.332 60.318	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09 0.14 -0.025 -0.18 -0.04 0.085	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:09 4/15/98 7:13 4/15/98 7:17 4/15/98 7:21 4/15/98 7:25 4/15/98 7:29 4/15/98 7:33 4/15/98 7:37 4/15/98 7:41	60.136 60.156 60.155 60.121 60.168 60.138 60.121 60.115 60.142 60.115 60.135 60.124 60.116 60.118 60.107 60.093 60.09	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09 0.005 -0.085 -0.115 -0.14 -0.125 -0.095 0.09
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49 4/15/98 8:53 4/15/98 9:01 4/15/98 9:05 4/15/98 9:05 4/15/98 9:13 4/15/98 9:17 4/15/98 9:21 4/15/98 9:25 4/15/98 9:29 4/15/98 9:33 4/15/98 9:37 4/15/98 9:41 4/15/98 9:45	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.316 60.339 60.323 60.357 60.332 60.332	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09 0.14 -0.025 -0.18 -0.04 0.085 -1.73	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:05 4/15/98 7:13 4/15/98 7:17 4/15/98 7:25 4/15/98 7:29 4/15/98 7:33 4/15/98 7:37 4/15/98 7:41 4/15/98 7:45	60.136 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115 60.135 60.124 60.116 60.118 60.107 60.093 60.09 60.082 60.074	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09 0.005 -0.085 -0.115 -0.14 -0.125 -0.095 0.09 0.01 0.12
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:53 4/15/98 8:57 4/15/98 9:01 4/15/98 9:05 4/15/98 9:05 4/15/98 9:13 4/15/98 9:17 4/15/98 9:21 4/15/98 9:25 4/15/98 9:25 4/15/98 9:33 4/15/98 9:37 4/15/98 9:41 4/15/98 9:45 4/15/98 9:49	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.399 60.316 60.316 60.339 60.304 60.323 60.357 60.332 60.332 60.321 60.324	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09 0.14 -0.025 -0.18 -0.04 0.085 -1.73 -6.915	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 7:01 4/15/98 7:05 4/15/98 7:05 4/15/98 7:09 4/15/98 7:13 4/15/98 7:17 4/15/98 7:21 4/15/98 7:25 4/15/98 7:29 4/15/98 7:33 4/15/98 7:37 4/15/98 7:41 4/15/98 7:45 4/15/98 7:49	60.136 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115 60.135 60.124 60.116 60.118 60.107 60.093 60.09 60.082 60.074 60.108	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09 0.005 -0.085 -0.115 -0.14 -0.125 -0.095 0.09 0.01 0.12 -0.055
4/15/98 8:33 4/15/98 8:37 4/15/98 8:41 4/15/98 8:45 4/15/98 8:49 4/15/98 8:53 4/15/98 9:01 4/15/98 9:05 4/15/98 9:05 4/15/98 9:13 4/15/98 9:17 4/15/98 9:21 4/15/98 9:25 4/15/98 9:29 4/15/98 9:33 4/15/98 9:37 4/15/98 9:41 4/15/98 9:45	60.311 60.306 60.32 60.327 60.327 60.304 60.32 60.297 60.313 60.309 60.316 60.316 60.339 60.323 60.357 60.332 60.332	0.08 0.105 -0.08 -0.035 -0.15 0.045 -0.055 0.095 0.015 -0.06 0.035 0.09 0.14 -0.025 -0.18 -0.04 0.085 -1.73	4/15/98 6:33 4/15/98 6:37 4/15/98 6:41 4/15/98 6:45 4/15/98 6:53 4/15/98 6:57 4/15/98 7:01 4/15/98 7:05 4/15/98 7:05 4/15/98 7:13 4/15/98 7:17 4/15/98 7:25 4/15/98 7:29 4/15/98 7:33 4/15/98 7:37 4/15/98 7:41 4/15/98 7:45	60.136 60.155 60.121 60.168 60.138 60.121 60.111 60.142 60.115 60.135 60.124 60.116 60.118 60.107 60.093 60.09 60.082 60.074	-0.075 0.06 -0.085 0 -0.285 0.02. -0.03 0.12 -0.09 0.005 -0.085 -0.115 -0.14 -0.125 -0.095 0.09 0.01 0.12

4/15/98 10:01	58.941	-18.49	4/15/98 8:01	60.097	-0.205
4/15/98 10:05	57.649	-14.82	4/15/98 8:05	60.089	-0.085
4/15/98 10:09	56.023	-8.9	4/15/98 8:09	60.077	0.13
4/15/98 10:13	55.243	-6.9	4/15/98 8:13	60.056	0.225
4/15/98 10:17	54.685	-5.815	4/15/98 8:17	60.072	0.175
4/15/98 10:21	54.243	-5.02	4/15/98 8:21	60.103	-0.12
4/15/98 10:25	53.863	-4.43	4/15/98 8:25	60.101	-0.04
4/15/98 10:29	53.522	-4.145	4/15/98 8:29	60.107	-0.095
4/15/98 10:33	53.239	-3.97	4/15/98 8:33	60.079	0.08
4/15/98 10:37	52.977	-3.9	4/15/98 8:37	60.093	0.01
4/15/98 10:41	52.693	-3.525	4/15/98 8:41	60.088	0.02
4/15/98 10:45	52.445	-3.43	4/15/98 8:45	60.095	0.06
4/15/98 10:49	52.197	-6.08	4/15/98 8:49	60.095	0.045
4/15/98 10:53	51.988	-6.495	4/15/98 8:53	60.092	-0.055
4/15/98 10:57	51.759	-6.885	4/15/98 8:57	60.107	0.045
4/15/98 11:01	50.981	-4.535	<b>4/15/98 9:01</b>	60.104	-0.1
4/15/98 11:05	50.689	-3.02	4/15/98 9:05	60.081	0.115
4/15/98 11:09	50.382	-1.315	4/15/98 9:09	60.116	-0.14
4/15/98 11:13	50.074	0.1	4/15/98 9:13	60.084	-0.06
4/15/98 11:17	50.085	1.22	4/15/98 9:17	60.104	-0.16
4/15/98 11:21	50.119	-1.945	4/15/98 9:21	60.088	-0.105
4/15/98 11:25	50.094	-7.385	4/15/98 9:25	60.072	-0.055
4/15/98 11:29	50.329	-30.245	4/15/98 9:29	60.072	0.17
4/15/98 11:33	49.73	-32.42	4/15/98 9:33	60.067	0.015
4/15/98 11:37	48.617	-26.845	4/15/98 9:37	60.061	0.06
4/15/98 11:41	44.28	-8.65	4/15/98 9:41	60.106	-0.21
4/15/98 11:45	43.246	-4.475	4/15/98 9:45	60.07	-2.505
4/15/98 11:49	43.248	-8.795	4/15/98 9:49	60.073	-8.665
4/15/98 11:53	42.55	-13.185	4/15/98 9:53	60.064	-16.835
4/15/98 11:57	42.351	-20.535	4/15/98 9:57	59.569	-23.675
4/15/98 12:01	41.489	-25.305	4/15/98 10:01	58.34	-26.815
4/15/98 12:05	39.913	-26.675	4/15/98 10:05	56.697	-27.685
4/15/98 12:09	38.244	-27.78	4/15/98 10:09	54.834	<i>-</i> 27.88.
4/15/98 12:13	36.428	-28.385	4/15/98 10:13	52.977	-28.02
4/15/98 12:17	34.578	-28.865	4/15/98 10:17	51.16	-26.11
4/15/98 12:21	32.688	-29.075	4/15/98 10:21	49.258	-23.2
4/15/98 12:25	30.751	<b>-</b> 25.07	4/15/98 10:25	47.373	-16
4/15/98 12:29	28.805	-23.4	4/15/98 10:29	45.938	-9.77
4/15/98 12:33	26.873	-17.305	4/15/98 10:33	44.618	-3.735
4/15/98 12:37	25.737	-13.275	4/15/98 10:37	44.173	-4.265
4/15/98 12:41	24.125	-6.97	4/15/98 10:41	43.984	-5.38
4/15/98 12:45	23.412	-4.67	4/15/98 10:45	43.871	-5.18
4/15/98 12:49	23.082	-3.655	4/15/98 10:49	43.32	-7.985
4/15/98 12:53	22.731	-2.125	4/15/98 10:53	42.908	-14.02
4/15/98 12:57	22.478	-0.98	4/15/98 10:57	42.835	-22.46
4/15/98 13:01	22.351	-0.325	4/15/98 11:01	41.723	-25.94
4/15/98 13:05	22.306	-0.305	4/15/98 11:05	40.104	-22.54
4/15/98 13:09	22.282	0.04	4/15/98 11:09	38.343	-22.68
4/15/98 13:13	22.286	-0.29	4/15/98 11:13	36.535	-16.92
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4/15/98 13:17	22.245	0.02		4/15/98 11:17	35.596	-13.76
4/15/98 13:21	22.29	-0.29		4/15/98 11:21	33.807	-5.47
4/15/98 13:25	22.228	3.055		4/15/98 11:25	33.151	-2.64
4/15/98 13:29	22.249	2.655		4/15/98 11:29	32.844	-6.185
4/15/98 13:33	22.232	2.26		4/15/98 11:33	32.713	-13.28
4/15/98 13:37	22.839	-1.17		4/15/98 11:37	32.623	-21.225
4/15/98 13:41	22.78	2.045		4/15/98 11:41	31.607	-25.505
4/15/98 13:45	22.684	3.645		4/15/98 11:45	30.057	-22.6
4/15/98 13:49	22.605	4.315		4/15/98 11:49	28.378	-23.22
4/15/98 13:53	23.189	-10.37		4/15/98 11:53	26.506	-17.765
4/15/98 13:57	23.413	-21.73		4/15/98 11:57	25.537	-14.585
4/15/98 14:01	23.468	-32.355		4/15/98 12:01	23.734	-6.405
4/15/98 14:05	21.115	-30.215		4/15/98 12:05	22.953	-2.955
4/15/98 14:09	19.067	-26.855		4/15/98 12:09	22.62	-1.5
4/15/98 14:13	16.997	-19.18		4/15/98 12:13	22.453	-0.77
4/15/98 14:17	15.072	-17.86		4/15/98 12:17	22.362	-0.315
4/15/98 14:21	13.696	-19.7185		4/15/98 12:21	22.32	-0.21
4/15/98 14:25	13.161	-26.3835		4/15/98 12:25	22.299	-0.01
4/15/98 14:29	11.5	-27.348		4/15/98 12:29	22.299	0.01
4/15/98 14:33	9.7523	-27.8275		4/15/98 12:33	22.278	0.065
4/15/98 14:37	7.8843	-27.831		4/15/98 12:37	22.297	-0.23
4/15/98 14:41	6.0304	-28.0332		4/15/98 12:41	22.299	-0.13
4/15/98 14:45	4.1868	-28.128		4/15/98 12:45	22.291	0.10
4/15/98 14:49	2.3181	-28.227		4/15/98 12:49	22.251	0.085
4/15/98 14:53	0.42377	-28.2114		4/15/98 12:53	22.273	0.06
4/15/98 14:57	· -1.4388	-25.5465	- I money	4/15/98 12:57	22.291	0.06
4/15/98 15:01	-3.3273	-26.221		4/15/98 13:01	22.268	0.195
4/15/98 15:05	-5.2185	-27.6025		4/15/98 13:05	22.285	-0.1
4/15/98 15:09	-6.5481	-30.9845		4/15/98 13:09	22.303	-0.065
4/15/98 15:13	-8.5715	-30.5875		4/15/98 13:13	22.307	-0.085
4/15/98 15:17	-10.739	-29.56		4/15/98 13:17	22.265	0.13
4/15/98 15:21	-12.745	-29.04		4/15/98 13:21	22.29	-0.29
4/15/98 15:25	-14.689	-27.52		4/15/98 13:25	22.29	-2.04
4/15/98 15:29	-16.651	-24.295		4/15/98 13:29	22.291	-4.73
4/15/98 15:33	-18.553	-22.84		4/15/98 13:33	22.232	-5.645
4/15/98 15:37	-20.193	-20.71		4/15/98 13:37	21.882	-4.4
4/15/98 15:41	-21.51	-17.91		4/15/98 13:41	21.345	-1.39
4/15/98 15:45	-23.121	-24.03		4/15/98 13:45	21.103	0.11
4/15/98 15:49	-24.335	-22.62		4/15/98 13:49	21.002	-4.635
4/15/98 15:53	-25.092	-21.14		4/15/98 13:53	21.067	-13.03
4/15/98 15:57	-27.927	-8.825		4/15/98 13:57	21.125	-21.94
4/15/98 16:01	-28.859	-3.775		4/15/98 14:01	20.075	-26.035
4/15/98 16:05	-29.32	-1.53		4/15/98 14:05	18.461	-22.755
4/15/98 16:09	-29.692	0.575		4/15/98 14:09	16.737	-23.27
4/15/98 16:13	-29.614	0.075		4/15/98 14:13	14.868	-20.76
4/15/98 16:17	-29.626	0.09		4/15/98 14:17	13.91	-25.0695
4/15/98 16:21	<b>-</b> 29.577	-0.08		4/15/98 14:21	12.083	-25.474
4/15/98 16:25	-29.599	-0.255		4/15/98 14:25	10.716	-28.145
4/15/98 16:29	-29.608	-0.225		4/15/98 14:29	8.8961	-28.2645
	25.000	J.440		17 10,000 14.20	3.0001	_00

4/15/98 16:33	-29.593	-0.2		4/15/98 14:33	6.9882	<b>-</b> 28.2195
4/15/98 16:37	-29.65	0.045		4/15/98 14:37	5.087	-27.7899
4/15/98 16:41	-29.653	0.02		4/15/98 14:41	3.2432	-27.9935
4/15/98 16:45	-29.633	-0.215		4/15/98 14:45	1.3443	-28.2025
4/15/98 16:49	-29.641	-0.12		4/15/98 14:49	-0.47097	-29.0747
4/15/98 16:53	-29.649	-0.145		4/15/98 14:53	-2.3555	-28.6175
4/15/98 16:57	-29.676	-0.075		4/15/98 14:57	-4.2962	-28.399
4/15/98 17:01	<b>-</b> 29.665	-0.1		4/15/98 15:01	-6.2859	-27.9755
4/15/98 17:05	-29.678	-0.025		4/15/98 15:05	-8.079	<b>-</b> 28.69
4/15/98 17:09	-29.691	-0.07		4/15/98 15:09	-9.976	-29.315
4/15/98 17:13	-29.685	-0.3		4/15/98 15:13	-11.881	-29.24
4/15/98 17:17	-29.683	-0.155		4/15/98 15:17	-13.817	-28.755
4/15/98 17:21	-29.705	0.07		4/15/98 15:21	-15.839	-28.455
4/15/98 17:25	-29.745	0.39		4/15/98 15:25	-17.729	-28.65
4/15/98 17:29	-29.714	0.265		4/15/98 15:29	-19.568	-29.22
4/15/98 17:33	-29.691	0.08		4/15/98 15:33	-21.53	-23.59
4/15/98 17:37	<b>-</b> 29.667	0.01		4/15/98 15:37	-23.459	-22.63
4/15/98 17:41	-29.661	-0.065		4/15/98 15:41	-25.412	-19.025
4/15/98 17:45	-29.675	0.055		4/15/98 15:45	-26.248	-16.94
4/15/98 17:49	-29.665	-0.23		4/15/98 15:49	-27.985	-9.175
4/15/98 17:53	-29.674	-0.01		4/15/98 15:53	-29.217	-3.45
4/15/98 17:57	-29.664	-0.025		4/15/98 15:57	-29.636	-2.395
4/15/98 18:01	-29.711	0.035		4/15/98 16:01	-29.82	-0.965
4/15/98 18:05	-29.676	0.01		4/15/98 16:05	-29.907	-0.47
4/15/98 18:09	-29.669	-0.09		4/15/98 16:09	-30.115	0.46
4/15/98 18:13	-29.704	-0.02	A ST COMMAND	4/15/98 16:13	-30.013	0.43
4/15/98 18:17	-29.674	-0.17	- <del>-</del>	4/15/98 16:17	-30.001	0.325
4/15/98 18:21	-29.687	0.03		4/15/98 16:21	-30.023	0.51
4/15/98 18:25	-29.708	0.15		4/15/98 16:25	-29.927	0.095
4/15/98 18:29	-29.708	-1.105		4/15/98 16:29	-29.936	0.125
4/15/98 18:33	-29.681	-0.385		4/15/98 16:33	-29.921	0.035
4/15/98 18:37	<i>-</i> 29.678	-0.09		4/15/98 16:37	-29.908	-0.07
4/15/98 18:41	-29.929	1.475		4/15/98 16:41	-29.911	-0.095.
4/15/98 18:45	-29.758	0.715		4/15/98 16:45	-29.914	-0.22
4/15/98 18:49	-29.696	0.41		4/15/98 16:49	-29.922	0.23
4/15/98 18:53	-29.634	0.12		4/15/98 16:53	-29.93	0.085
4/15/98 18:57	-29.615	-0.05		4/15/98 16:57	-29.958	0.165
4/15/98 19:01	-29.614	0.345		4/15/98 17:01	-29.876	-0.335
4/15/98 19:05	-29.61	0.035		4/15/98 17:05	-29.913	-0.025
4/15/98 19:09	-29.625	0.295		4/15/98 17:09	-29.925	0.045
4/15/98 19:13	-29.545	-0.18		4/15/98 17:13	-29.943	-0.185
4/15/98 19:17	-29.603	0.175		4/15/98 17:17	-29.918	-0.035
4/15/98 19:21	-29.566	-0.08		4/15/98 17:21	-29.916	-0.165
4/15/98 19:25	-29.581	-0.08		4/15/98 17:25	-29.98	0.395
4/15/98 19:29	-29.568	-0.24		4/15/98 17:29	-29.925	-0.09
4/15/98 19:33	-29.582	-0.265		4/15/98 17:33	-29.949	0.08
4/15/98 19:37	-29.597	-0.19		4/15/98 17:37	-29.901	-0.11
4/15/98 19:41	-29.616	-0.8		4/15/98 17:41	-29.943	-0.065
4/15/98 19:45	-29.635	-0.14		4/15/98 17:45	-29.933	0.055
	20.000	0.17		3.009		

4/15/98 19:49	-29.635	-0.065		4/15/98 17:49	-29.923	-0.23
4/15/98 19:53	-29.776	0.615		4/15/98 17:53	-29.956	-0.005
4/15/98 19:57	-29.663	6.14		4/15/98 17:57	-29.922	-0.14
4/15/98 20:01	-29.648	15.28		4/15/98 18:01	-29.969	0.035
4/15/98 20:05	-29.653	24.5		4/15/98 18:05	-29.957	-0.11
4/15/98 20:09	-28.435	27.905		4/15/98 18:09	-29.95	-0.09
4/15/98 20:13	-26.592	28.05		4/15/98 18:13	-29.962	-0.02
4/15/98 20:17	-24.753	28.42		4/15/98 18:17	-29.979	-0.05
4/15/98 20:21	-22.854	28.2		4/15/98 18:21	-29.968	0.025
4/15/98 20:25	-20.982	28.545		4/15/98 18:25	-29.966	-0.205
4/15/98 20:29	-19.069	28.28		4/15/98 18:29	-29.989	-1.345
4/15/98 20:33	-17.214	28.4		4/15/98 18:33	-29.963	-0.735
4/15/98 20:37	-15.273	28.0035		4/15/98 18:37	-30.007	-0.325
4/15/98 20:41	-13.413	28.1945		4/15/98 18:41	-30.258	1.245
4/15/98 20:45	-11.534	28.241		4/15/98 18:45	-30.11	0.715
4/15/98 20:49	-9.6723	28.319		4/15/98 18:49	-30.072	0.645
4/15/98 20:53	-7.7741	28.2065		4/15/98 18:53	-30.009	0.235
4/15/98 20:57	-5.8858	28.20915		4/15/98 18:57	-29.967	-0.165
4/15/98 21:01	-4.0085	28.3125		4/15/98 19:01	-29.943	-0.24
4/15/98 21:05	-2.1328	28.3815		4/15/98 19:05	-29.962	0.27
4/15/98 21:09	-0.24397	28.47085		4/15/98 19:09	-30	0.295
4/15/98 21:13	1.654	28.366		4/15/98 19:13	-29.991	-0.06
4/15/98 21:17	3.5435	28.3905		4/15/98 19:17	-29.908	0.06
4/15/98 21:21	5.4502	28.374		4/15/98 19:21	-29.941	0.035
4/15/98 21:25	7.3272	28.489		4/15/98 19:25	-30.003	0.27
4/15/98 21:29	<b>9.2216</b>	28.372	ter at the same	4/15/98 19:29	-29.896	-0.125
4/15/98 21:33	11.125	28.4		4/15/98 19:33	-29.934	-0.03
4/15/98 21:37	13.025	28.385		4/15/98 19:37	-29.949	0.045
4/15/98 21:41	14.896	28.48		4/15/98 19:41	-29.921	-0.8
4/15/98 21:45	16.805	27.705		4/15/98 19:45	-29.94	-0.495
4/15/98 21:49	18.702	22.265		4/15/98 19:49	-29.94	0.05
4/15/98 21:53	20.592	13.46		4/15/98 19:53	-30.081	0.85
4/15/98 21:57	22.346	5.755		4/15/98 19:57	-30.039	7.435.
4/15/98 22:01	23.155	1.835		4/15/98 20:01	-29.93	16.225
4/15/98 22:05	23.284	-1.815		4/15/98 20:05	-29.911	25.67
4/15/98 22:09	23.497	-3.4		4/15/98 20:09	-28.552	28.145
4/15/98 22:13	23.522	-3.94		4/15/98 20:13	-26.685	28.17
4/15/98 22:17	22.921	-0.99	•	4/15/98 20:17	-24.777	28.315
4/15/98 22:21	22.817	-0.56		4/15/98 20:21	-22.923	28.545
4/15/98 22:25	22.734	-0.145		4/15/98 20:25	-21.051	28.665
4/15/98 22:29	22.723	2.77		4/15/98 20:29	-19.114	28.055
4/15/98 22:33	22.705	10.105		4/15/98 20:33	-17.214	28.175
4/15/98 22:37	22.705	18.38		4/15/98 20:37	-15.318	28.2285
4/15/98 22:41	23.277	24.695		4/15/98 20:41	-13.503	28.6445
4/15/98 22:45	24.726	26.505		4/15/98 20:45	-11.579	28.466
4/15/98 22:49	26.381	27.545		4/15/98 20:49	-9.6723	28.4295
4/15/98 22:53	28.216	27.625		4/15/98 20:53	-7.7741	28.5355
4/15/98 22:57	30.027	28.015		4/15/98 20:57	-5.8858	28.64605
4/15/98 23:01	31.89	28.095		4/15/98 21:01	-3.9864	28.528

4/15/98 23:05	33.741	28.3		4/15/98 21:05	-2.067	28.5935
4/15/98 23:09	35.63	28.305		4/15/98 21:09	-0.15659	28.46495
4/15/98 23:13	37.509	28.39		4/15/98 21:13	1.7192	28.4695
4/15/98 23:17	39.401	28.3		4/15/98 21:17	3.6517	28.491
4/15/98 23:21	41.291	28.27		4/15/98 21:21	5.5364	28.583
4/15/98 23:25	43.187	28.3		4/15/98 21:25	7.4131	28.5895
4/15/98 23:29	45.061	28.375		4/15/98 21:29	9.3499	28.4705
4/15/98 23:33	46.945	28.35		4/15/98 21:33	11.253	28.495
4/15/98 23:37	48.847	28.03		4/15/98 21:37	13.131	28.485
4/15/98 23:41	50.736	27.445		4/15/98 21:41	15.044	28.68
4/15/98 23:45	52.615	26.425		4/15/98 21:45	16.952	27.175
4/15/98 23:49	54,453	22.975		4/15/98 21:49	18.828	19.455
4/15/98 23:53	56.225	17.045		4/15/98 21:53	20.78	10.965
4/15/98 23:57	57.9	10.19		4/15/98 21:57	22.387	3.475
4/16/98 0:01	59.048	5.205		4/15/98 22:01	22.719	2.15
4/16/98 0:05	59.634	2.66		4/15/98 22:05	22.973	1.09
4/16/98 0:09	59.938	1.33		4/15/98 22:09	23.082	0.545
4/16/98 0:13	60.089	0.705		4/15/98 22:13	23.149	0.21
4/16/98 0:17	60.166	0.355		4/15/98 22:17	23.191	0.15
4/16/98 0:21	60.204	0.26		4/15/98 22:21	23.191	-0.04
4/16/98 0:25	60.23	0.225		4/15/98 22:25	23.191	0.27
4/16/98 0:29	60.237	0.27		4/15/98 22:29	23.221	4.325
4/16/98 0:33	60.256	0.06		4/15/98 22:33	23.183	12.055
4/16/98 0:37	60.275	0.165		4/15/98 22:37	23.245	20.42
4/16/98 0:41	60.291	-0.035		4/15/98 22:41	24.086	25.37
4/16/98 0:45	60.268	0.07	the first seeing	4/15/98 22:45	25.594	27.175
4/16/98 0:49	60.308	-0.11	-	4/15/98 22:49	27.329	27.895
4/16/98 0:53	60.284	-0.17		4/15/98 22:53	29.16	28.185
4/16/98 0:57	60.282	-0.135		4/15/98 22:57	31.029	28.265
4/16/98 1:01	60.286	0.06		4/15/98 23:01	32.908	28.345
4/16/98 1:05	60.25	0.25		4/15/98 23:05	34.797	28.335
4/16/98 1:09	60.255	0.11		4/15/98 23:09	36.682	28.54
4/16/98 1:13	60.298	-0.125		4/15/98 23:13	38.577	28.53
4/16/98 1:17	60.3	-0.155		4/15/98 23:17	40.464	28.645
4/16/98 1:21	60.277	0.055		4/15/98 23:21	42.39	28.41
4/16/98 1:25	60.273	-0.005		4/15/98 23:25	44.283	28.435
4/16/98 1:29	60.269	0.015	•	4/15/98 23:29	46.193	28.51
4/16/98 1:33	60.288	0.11		4/15/98 23:33	48.072	28.685
4/16/98 1:37	60.272	0.115		4/15/98 23:37	49.97	28.85
4/16/98 1:41	60.272	0.015		4/15/98 23:41	51.895	26.8
4/16/98 1:45	60.31	-0.19		4/15/98 23:45	53.809	24.82
4/16/98 1:49	60.295	-0.02		4/15/98 23:49	55.74	18.38
4/16/98 1:53	60.275	-0.06		4/15/98 23:53	57.255	12.375
4/16/98 1:57	60.272	-0.04		4/15/98 23:57	58.773	5.345
4/16/98 2:01	60.291	-0.205		4/16/98 0:01	59.416	2.495
4/16/98 2:05	60.263	0.03		4/16/98 0:05	59.73	1.02
4/16/98 2:09	60.264	0.125		4/16/98 0:09	59.842	0.65
4/16/98 2:13	60.25	0.18		4/16/98 0:13	59.915	0.32
4/16/98 2:17	60.269	0.085		4/16/98 0:17	59.934	0.26
-11 10100 E. 11	00.200	5.500				

4/16/98 2:21	60.289	-0.09		4/16/98 0:21	59.972	0.07
4/16/98 2:25	60.286	0.02		4/16/98 0:25	59.979	0.035
4/16/98 2:29	60.286	0.02		4/16/98 0:29	59.986	-0.02
4/16/98 2:33	60.271	0.22		4/16/98 0:33	59.986	0.155
4/16/98 2:37	60.29	-0.095		4/16/98 0:37	59.986	0.16
4/16/98 2:41	60.29	-0.1		4/16/98 0:41	59.982	0.06
4/16/98 2:45	60.315	-0.13		4/16/98 0:45	60.017	-0.03
4/16/98 2:49	60.271	0.105		4/16/98 0:49	60.018	0.08
4/16/98 2:53	60.27	0.205		4/16/98 0:53	59.994	0.025
4/16/98 2:57	60.289	0.13		4/16/98 0:57	60.011	-0.035
4/16/98 3:01	60.292	-0.01		4/16/98 1:01	60.034	-0.13
4/16/98 3:05	60.311	-0.1		4/16/98 1:05	59.999	-0.04
4/16/98 3:09	60.315	-0.255		4/16/98 1:09	60.004	0.11
4/16/98 3:13	60.29	-0.12		4/16/98 1:13	60.008	-0.03
4/16/98 3:17	60.291	-0.215		4/16/98 1:17	59.991	0.135
4/16/98 3:21	60.264	0.12		4/16/98 1:21	60.026	-0.14
4/16/98 3:25	60.266	0.29		4/16/98 1:25	60.002	0
4/16/98 3:29	60.248	0.265		4/16/98 1:29	60.018	0.015
4/16/98 3:33	60.288	-0.02		4/16/98 1:33	59.998	0.015
4/16/98 3:37	60.324	-0.085		4/16/98 1:37	60.002	0.11
4/16/98 3:41	60.301	-0.095		4/16/98 1:41	60.021	-0.08
4/16/98 3:45	60.284	-0.015		4/16/98 1:45	60.001	0
4/16/98 3:49	60.307	-0.06		4/16/98 1:49	60.024	-0.115
4/16/98 3:53	60.282	-0.05		4/16/98 1:53	60.005	-0.06
4/16/98 3:57	60.281	0.055		4/16/98 1:57	60.001	0.06
4/16/98 4:01	← 60.295	-0.08	e de la company	4/16/98 2:01	60.001	-0.015
4/16/98 4:05	60.272	-5.495		4/16/98 2:05	59.993	0.03
4/16/98 4:09	60.292	-14.64		4/16/98 2:09	60.013	-0.07
4/16/98 4:13	60.279	-24.015		4/16/98 2:13	59.998	0.09
4/16/98 4:17	59.173	-27.96		4/16/98 2:17	59.999	0.085
4/16/98 4:21	57.364	-28.62		4/16/98 2:21	59.999	0.005
4/16/98 4:25	55.476	-28.75		4/16/98 2:25	60.016	-0.08
4/16/98 4:29	53.581	-29.025		4/16/98 2:29	60.016	<b>-0.175</b> .
4/16/98 4:33	51.64	-28.89		4/16/98 2:33	60	0.03
4/16/98 4:37	49.726	-28.82		4/16/98 2:37	60	0.005
4/16/98 4:41	47.776	-28.605		4/16/98 2:41	59.981	0.095
4/16/98 4:45	45.862	-28.505		4/16/98 2:45	60.006	-0.13
4/16/98 4:49	43.962	-28.49		4/16/98 2:49	60.001	0.105
4/16/98 4:53	42.055	-28.54		4/16/98 2:53	60	0.01
4/16/98 4:57	40.161	-28.685		4/16/98 2:57	59.98	0.125
4/16/98 5:01	38.264	-28.755		4/16/98 3:01	60.022	-0.205
4/16/98 5:05	36.347	-28.76		4/16/98 3:05	60.002	-0.005
4/16/98 5:09	34.424	-28.69	A 4 10	4/16/98 3:09	60.005	-0.055
4/16/98 5:13	32.513	-28.735		4/16/98 3:13	59.981	0.075
4/16/98 5:17	30.595	-28.655		4/16/98 3:17	60.001	-0.02
4/16/98 5:21	28.686	-28.755		4/16/98 3:21	59.994 50.006	0.02
4/16/98 5:25	26.766	-28.71		4/16/98 3:25	59.996 50.007	-0.005
4/16/98 5:29	24.864	-28.835		4/16/98 3:29	59.997 59.998	-0.025
4/16/98 5:33	22.935	<i>-</i> 28.67		4/16/98 3:33	59.396	-0.02

4/16/98 5:37	21.024	-28.635		4/16/98 3:37	59.995	0.11
4/16/98 5:41	19.097	-28.58		4/16/98 3:41	59.992	0
4/16/98 5:45	17.201	-28.615		4/16/98 3:45	59.994	0.08
4/16/98 5:49	15.297	-28.639		4/16/98 3:49	60.017	-0.25
4/16/98 5:53	13.381	-28.6245		4/16/98 3:53	59.992	0.045
4/16/98 5:57	11.478	-28.6295		4/16/98 3:57	60.01	-0.04
4/16/98 6:01	9.5692	-28.6665		4/16/98 4:01	59.967	0.305
4/16/98 6:05	7.6561	-28.5675		4/16/98 4:05	60.001	-4.43
4/16/98 6:09	5.7521	-28.5081		4/16/98 4:09	60.002	-13.285
4/16/98 6:13	3.8359	-28.5525		4/16/98 4:13	60.028	-23.15
4/16/98 6:17	1.9426	-28.6425		4/16/98 4:17	59.115	-28.55
4/16/98 6:21	0.050474	-28.6004		4/16/98 4:21	57.345	-29.41
4/16/98 6:25	-1.8746	-28.538		4/16/98 4:25	55.398	-29.345
4/16/98 6:29	-3.7859	-28.5515		4/16/98 4:29	53.405	-28.84
4/16/98 6:33	-5.6696	-28.632		4/16/98 4:33	51.463	-28.6
4/16/98 6:37	-7.5822	-28.499		4/16/98 4:37	49.529	-28.435
4/16/98 6:41	-9.4962	-28.469		4/16/98 4:41	47.637	-28.51
4/16/98 6:45	-11.396	-28.69		4/16/98 4:45	45.743	-28.715
4/16/98 6:49	-13.282	-28.7		4/16/98 4:49	43.842	-28.695
4/16/98 6:53	-15.19	-28.74		4/16/98 4:53	41.935	<i>-</i> 28.85
4/16/98 6:57	-17.134	-28.785		4/16/98 4:57	40	-28.595
4/16/98 7:01	-19.022	-28.7		4/16/98 5:01	38.103	-28.765
4/16/98 7:05	-20.938	<i>-</i> 28.675		4/16/98 5:05	36.165	-28.465
4/16/98 7:09	<i>-</i> 22.891	-19.175		4/16/98 5:09	34.281	-28.59
4/16/98 7:13	-24.762	-21.74		4/16/98 5:13	32.35	-28.64
4/16/98 7:17	< <b>-</b> 26.673	-16.295	the figure of the second	4/16/98 5:17	30.472	-28.765
4/16/98 7:21	-26.726	-18.035		4/16/98 5:21	28.563	-28.76
4/16/98 7:25	-29.11	-7.015		4/16/98 5:25	26.622	-28.615
4/16/98 7:29	-29.932	-3.39		4/16/98 5:29	24.719	-28.635
4/16/98 7:33	-30.333	-1.69		4/16/98 5:33	22.811	-28.785
4/16/98 7:37	-30.513	-0.82		4/16/98 5:37	20.899	-28.75
4/16/98 7:41	-30.61	-0.56		4/16/98 5:41	18.992	-28.69
4/16/98 7:45	-30.671	-0.01		4/16/98 5:45	17.054	-28.625.
4/16/98 7:49	-30.677	1.54		4/16/98 5:49	15.149	-28.54
4/16/98 7:53	-30.722	3.28		4/16/98 5:53	13.254	-28.9555
4/16/98 7:57	-30.673	2.575		4/16/98 5:57	11.329	-28.962
4/16/98 8:01	-30.369	-0.325		4/16/98 6:01	9.441	-29.108
4/16/98 8:05	-30.066	-2.45		4/16/98 6:05	7.4629	-28.6885
4/16/98 8:09	-30.158	-2.32		4/16/98 6:09	5.5366	-28.741
4/16/98 8:13	-30.434	-0.85		4/16/98 6:13	3.6194	-28.457
4/16/98 8:17	-30.556	-0.27		4/16/98 6:17	1.7252	-28.7675
4/16/98 8:21	-30.622	0.095	**	4/16/98 6:21	-0.2116	-28.618
4/16/98 8:25	-30.604	-0.22		4/16/98 6:25	-2.072 4.0393	-28.996
4/16/98 8:29	-30.61	-0.175		4/16/98 6:29	-4.0283 5.0252	-28.791
4/16/98 8:33	-30.603	-0.06		4/16/98 6:33	-5.9352 7.9712	-28.649 -28.519
4/16/98 8:37	-30.648	0.34		4/16/98 6:37	-7.8712 -0.7865	-28.519 -28.4875
4/16/98 8:41 4/16/98 8:45	-30.645	0.36		4/16/98 6:41 4/16/98 6:45	-9.7865 -11.665	-26.4675 -28.48
4/16/98 8:49 4/16/98 8:49	-30.615	0.16		4/16/98 6:49	-11.005 -13.575	-28.495
4/ 10/90 0:49	-30.58	-0.13		4/ 10/30 0.43	-13.575	-20.430

4/16/98 8:53	-30.573	-0.18		4/16/98 6:53	-15.484	-28.535
4/16/98 8:57	-30.583	-0.185		4/16/98 6:57	-17.361	-28.8
4/16/98 9:01	-30.606	-0.1		4/16/98 7:01	-19.274	-28.6
4/16/98 9:05	-30.609	-0.025		4/16/98 7:05	-21.191	-28.575
4/16/98 9:09	-30.62	-0.165		4/16/98 7:09	-23.121	-20.59
4/16/98 9:13	-30.626	-0.18		4/16/98 7:13	-24.994	-22.57
4/16/98 9:17	-30.614	-0.345		4/16/98 7:17	-26.906	-16.89
4/16/98 9:21	-30.653	-0.155		4/16/98 7:21	-27.239	-17.23
4/16/98 9:25	-30.662	0.1		4/16/98 7:25	-29.508	-6.67
4/16/98 9:29	-30.683	0.04		4/16/98 7:29	-30.284	-3.395
4/16/98 9:33	-30.684	0.115		4/16/98 7:33	-30.685	-1.46
4/16/98 9:37	-30.642	-0.02		4/16/98 7:37	-30.842	-0.59
4/16/98 9:41	-30.675	-0.02		4/16/98 7:41	-30.963	-0.09
4/16/98 9:45	-30.661	-0.11		4/16/98 7:45	-30.977	0.11
4/16/98 9:49	-30.646	0.005		4/16/98 7:49	-30.96	- 2.25
4/16/98 9:53	<b>-</b> 30.679	-0.325		4/16/98 7:53	-30.981	3.4
4/16/98 9:57	-30.683	0.005		4/16/98 7:57	-30.955	2.34
4/16/98 10:01	-30.645	-0.09		4/16/98 8:01	-30.51	-0.915
4/16/98 10:05	-30.744	0.385		4/16/98 8:05	-30.301	-2.565
4/16/98 10:09	-30.682	-1.155		4/16/98 8:09	-30.487	-1.965
4/16/98 10:13	-30.663	-0.355		4/16/98 8:13	-30.693	-1.085
4/16/98 10:17	-30.667	0.035		4/16/98 8:17	-30.814	-0.395
4/16/98 10:21	-30.913	1.2		4/16/98 8:21	-30.88	-0.265
4/16/98 10:25	-30.734	0.495		4/16/98 8:25	-30.91	0.255
4/16/98 10:29	-30.66	-0.145		4/16/98 8:29	-30.893	0.065
4/16/98 10:33	4 -30.673	0.3	the state of the same	4/16/98 8:33	-30.933	0.3
4/16/98 10:37	-30.635	0.15		4/16/98 8:37	-30.859	-0.25
4/16/98 10:41	-30.689	0.345		4/16/98 8:41	-30.88	-0.11
4/16/98 10:45	-30.613	0.005		4/16/98 8:45	-30.873	-0.2
4/16/98 10:49	-30.605	0.005		4/16/98 8:49	-30.909	0.105
4/16/98 10:53	-30.62	0.005		4/16/98 8:53	-30.902	0.055
4/16/98 10:57	-30.612	-0.025		4/16/98 8:57	-30.913	0.055
4/16/98 11:01	-30.604	-0.155		4/16/98 9:01	-30.888	0.015
4/16/98 11:05	-30.619	0.05		4/16/98 9:05	-30.891	-0.025
4/16/98 11:09	-30.617	-0.09		4/16/98 9:09	-30.902	-0.165
4/16/98 11:13	-30.635	-0.17		4/16/98 9:13	-30.885	-0.18
4/16/98 11:17	-30.609	-0.26		4/16/98 9:17	-30.896	-0.11
4/16/98 11:21	-30.635	-0.085	•	4/16/98 9:21	-30.935	-0.04
4/16/98 11:25	-30.669	-1.54		4/16/98 9:25	-30.921	-0.135
4/16/98 11:29	-30.661	2.435		4/16/98 9:29	-30.918	-0.08
4/16/98 11:33	-30.652	8.625		4/16/98 9:33	-30.943	0
4/16/98 11:37	-30.977	18.565		4/16/98 9:37	-30.948	-0.14
4/16/98 11:41	-30.174	23.57		4/16/98 9:41	-30.934	-0.02
4/16/98 11:45	-28.927	26.57		4/16/98 9:45	-30.943	-0.115
4/16/98 11:49	-27.264	29.675	•	4/16/98 9:49	-30.976	0.125
4/16/98 11:53	-25.46	28.32		4/16/98 9:53	-30.938	-0.325
4/16/98 11:57	-23.613	21.015		4/16/98 9:57	-30.966	0.01
4/16/98 12:01	-21.329	11.525		4/16/98 10:01	-30.951	-0.09
4/16/98 12:05	-19.796	10.35		4/16/98 10:05	-31.003	-0.085

4/16/98 12:09	-19.41	16.365		4/16/98 10:09	-30.964	-0.57
4/16/98 12:13	-19.024	23.385		4/16/98 10:13	-30.969	0.12
4/16/98 12:17	-17.726	26.505		4/16/98 10:17	-31.02	0.385
4/16/98 12:21	-16.137	29.89		4/16/98 10:21	-31.078	0.73
4/16/98 12:25	-14.347	24.332		4/16/98 10:25	-30.945	0.37
4/16/98 12:29	-12.425	16.401		4/16/98 10:29	-30.943	0.21
4/16/98 12:33	-10.159	5.7465		4/16/98 10:33	-30.932	0.18
4/16/98 12:37	-9.4806	2.363		4/16/98 10:37	-30.871	-0.2
4/16/98 12:41	-9.1448	0.7215		4/16/98 10:41	-30.901	-0.005
4/16/98 12:45	-9.0097	0.8085		4/16/98 10:45	<b>-</b> 30.896	0.125
4/16/98 12:49	-9.008	6.593		4/16/98 10:49	-30.911	0.12
4/16/98 12:53	-9.0005	14.308		4/16/98 10:53	-30.902	-0.115
4/16/98 12:57	-8.848	22.1745		4/16/98 10:57	-30.871	-0.26
4/16/98 13:01	-7.6894	25.4165		4/16/98 11:01	-30.887	-0.385
4/16/98 13:05	-6.1389	29.04645		4/16/98 11:05	-30.925	0.05
4/16/98 13:09	-4.4131	25.25025		4/16/98 11:09	-30.923	-0.205
4/16/98 13:13	-2.6061	20.8205		4/16/98 11:13	-30.964	-0.055
4/16/98 13:17	-0.32961	17.83055		4/16/98 11:17	-30.915	-0.14
4/16/98 13:21	0.63695	21.79025		4/16/98 11:21	-30.964	-0.085
4/16/98 13:25	1.558	26.051		4/16/98 11:25	-30.975	-0.95
4/16/98 13:29	3.2365	28.463		4/16/98 11:29	-30.943	1.97
4/16/98 13:33	4.995	28.54		4/16/98 11:33	-30.981	9.22
4/16/98 13:37	6.7682	20.319		4/16/98 11:37	-31.165	18.69
4/16/98 13:41	8.9291	11.1495		4/16/98 11:41	-30.549	24.75
4/16/98 13:45	10.703	7.6		4/16/98 11:45	-29.137	27.04
4/16/98 13:49	10.832	14.575	e de l'annuel de la company	4/16/98 11:49	-27.427	30.03
4/16/98 13:53	11.159	21.595		4/16/98 11:53	-25.599	26.61
4/16/98 13:57	12.223	25.205		4/16/98 11:57	-23.729	19.08
4/16/98 14:01	13.747	27.02		4/16/98 12:01	-21.421	10.045
4/16/98 14:05	15.478	27.655		4/16/98 12:05	-20.277	11.615
4/16/98 14:09	17.264	24.36		4/16/98 12:09	-19.913	18.31
4/16/98 14:13	19.151	15.255		4/16/98 12:13	-19.412	24.985
4/16/98 14:17	21.009	7.205		4/16/98 12:17	-17.954	28.205.
4/16/98 14:21	22.136	2.165		4/16/98 12:21	-16.251	30.125
4/16/98 14:25	22.202	2.66		4/16/98 12:25	-14.415	22.662
4/16/98 14:29	22.45	7.035	•	4/16/98 12:29	-12.313	13.4975
4/16/98 14:33	22.569	14.465		4/16/98 12:33	-10.226	3.516
4/16/98 14:37	22.734	22.56		4/16/98 12:37	-9.8826	1.919
4/16/98 14:41	23.857	26.085		4/16/98 12:41	-9.6135	0.834
4/16/98 14:45	25.462	27.35		4/16/98 12:45	-9.5228	2.0365
4/16/98 14:49	27.246	27.87		4/16/98 12:49	-9.4988	8.6025
4/16/98 14:53	29.074	28.05		4/16/98 12:53	-9.4467	16.4285
4/16/98 14:57	30.932	28.23		4/16/98 12:57	-9.1155	23.733
4/16/98 15:01	32.82	28.16		4/16/98 13:01	-7.7783	26.7395
4/16/98 15:05	34.684	28.275		4/16/98 13:05	-6.161	28.61055
4/16/98 15:09	36.578	28.225		4/16/98 13:09	-4.3689	23.3934
4/16/98 15:13	38.452	28.325		4/16/98 13:13	-2.4304	21.5735
4/16/98 15:17	40.339	28.345	•	4/16/98 13:17	-0.43889	20.32695
4/16/98 15:21	42.223	28.4		4/16/98 13:21	0.30978	25.6921

4/16/98 15:25	44.117	28.27		4/16/98 13:25	1.8843	27.213
4/16/98 15:29	46.008	28.125		4/16/98 13:29	3.6265	29.507
4/16/98 15:33	47.903	28.07		4/16/98 13:33	5.4482	24.459
4/16/98 15:37	49.771	28.185		4/16/98 13:37	7.3269	16.3555
4/16/98 15:41	51.633	26.745		4/16/98 13:41	9.5279	6.6605
4/16/98 15:45	53.517	25.35		4/16/98 13:45	10.34	8.99
4/16/98 15:49	55.408	19.915		4/16/98 13:49	10.598	15.955
4/16/98 15:53	56.982	14.03		4/16/98 13:53	10.86	23.51
4/16/98 15:57	58.587	7.235		4/16/98 13:57	12.138	26.155
4/16/98 16:01	59.391	3.655		4/16/98 14:01	13.789	27.645
4/16/98 16:05	59.788	2.03		4/16/98 14:05	15.562	27.755
4/16/98 16:09	60.034	1.065		4/16/98 14:09	17.369	21.34
4/16/98 16:13	60.122	0.68		4/16/98 14:13	19.318	12.96
4/16/98 16:17	60.194	0.37		4/16/98 14:17	21.113	4.29
4/16/98 16:21	60.247	0.065		4/16/98 14:21	21.637	1.75
4/16/98 16:25	60.258	0.14		4/16/98 14:25	21.91	2.46
4/16/98 16:29	60.268	0.11		4/16/98 14:29	21.971	9.325
4/16/98 16:33	60.26	0.15		4/16/98 14:33	21.987	17.685
4/16/98 16:37	60.286	0.1		4/16/98 14:37	22.402	24.63
4/16/98 16:41	60.29	-0.035		4/16/98 14:41	23.836	26.905
4/16/98 16:45	60.29	0.14		4/16/98 14:45	25.524	27.755
4/16/98 16:49	60.306	-0.135		4/16/98 14:49	27.328	28.275
4/16/98 16:53	60.283	0.06		4/16/98 14:53	29.217	28.25
4/16/98 16:57	60.318	-0.02		4/16/98 14:57	31.075	28.425
4/16/98 17:01	60.279	0.06		4/16/98 15:01	32.983	28.25
4/16/98 17:05	← 60.295	0.175	• • • • • • • • • • • • • • • • • • • •	4/16/98 15:05	34.867	28.365
4/16/98 17:09	60.314	-0.035	·	4/16/98 15:09	36.76	28.415
4/16/98 17:13	60.291	0.08		4/16/98 15:13	38.633	28.615
4/16/98 17:17	60.33	-0.22		4/16/98 15:17	40.54	28.63
4/16/98 17:21	60.307	-0.1		4/16/98 15:21	42.443	28.68
4/16/98 17:25	60.307	0.1		4/16/98 15:25	44.356	28.555
4/16/98 17:29	60.286	-0.005		4/16/98 15:29	46.266	28.505
4/16/98 17:33	60.287	0.09		4/16/98 15:33	48.179	28.45
4/16/98 17:37	60.327	-0.1		4/16/98 15:37	50.067	28.75
4/16/98 17:41	60.285	0.085		4/16/98 15:41	51.967	26.73
4/16/98 17:45	60.305	0.195		4/16/98 15:45	53.869	24.755
4/16/98 17:49	60.307	0.05		4/16/98 15:49	55.817	17.87
4/16/98 17:53	60.302	0.15		4/16/98 15:53	57.313	11.895
4/16/98 17:57	60.344	-0.06		4/16/98 15:57	58.82	5.01
4/16/98 18:01	60.317	-0.025		4/16/98 16:01	59.391	2.205
4/16/98 18:05	60.332	-0.09		4/16/98 16:05	59.692	0.87
4/16/98 18:09	60.332	-0.04		4/16/98 16:09	59.822	0.195
4/16/98 18:13	60.312	-0.06		4/16/98 16:13	59.832	0.295
4/16/98 18:17	60.314	0.025		4/16/98 16:17	59.866	0.08
4/16/98 18:21	60.324	-0.125		4/16/98 16:21	59.861	0.16
4/16/98 18:25	60.3	0.07		4/16/98 16:25	59.891	0.045
4/16/98 18:29	60.319	0.055		4/16/98 16:29	59.882	0.01
4/16/98 18:33	60.299	0.135		4/16/98 16:33	59.893	-0.045
4/16/98 18:37	60.314	0.04		4/16/98 16:37	59.9	-0.195
	JJ.017	0.07			20.0	

4/16/98 18:41	60.33	-0.075		4/16/98 16:41	59.884	-0.035
4/16/98 18:45	60.326	0.025		4/16/98 16:45	59.884	0.04
4/16/98 18:49	60.322	0.025		4/16/98 16:49	59.861	0.06
4/16/98 18:53	60.315	0.14		4/16/98 16:53	59.877	-0.035
4/16/98 18:57	60.331	-0.17		4/16/98 16:57	59.892	-0.015
4/16/98 19:01	60.327	-0.075		4/16/98 17:01	59.873	0.16
4/16/98 19:05	60.343	-0.195		4/16/98 17:05	59.87	0.075
4/16/98 19:09	60.297	0.14		4/16/98 17:09	59.889	-0.035
4/16/98 19:13	60.312	-0.03		4/16/98 17:13	59.905	-0.115
4/16/98 19:17	60.304	0.015		4/16/98 17:17	59.885	-0.025
4/16/98 19:21	60.325	0.015		4/16/98 17:21	59.882	-0.1
4/16/98 19:25	60.306	0.07		4/16/98 17:25	59.882	0.1
4/16/98 19:29	60.307	0.065		4/16/98 17:29	59.88	. 0
4/16/98 19:33	60.328	-0.065		4/16/98 17:33	59.862	0.185
4/16/98 19:37	60.32	-0.125		4/16/98 17:37	59.902	-0.005
4/16/98 19:41	60.32	-0.13		4/16/98 17:41	59.88	-0.015
4/16/98 19:45	60.315	0.02		4/16/98 17:45	59.899	-0.19
4/16/98 19:49	60.295	0.04		4/16/98 17:49	59.901	0.05
4/16/98 19:53	60.294	0.16		4/16/98 17:53	59.877	0.055
4/16/98 19:57	60.319	-0.125		4/16/98 17:57	59.861	0.135
4/16/98 20:01	60.303	-0.03		4/16/98 18:01	59.911	-0.02
4/16/98 20:05	60.326	-2.56		4/16/98 18:05	59.888	0.1
4/16/98 20:09	60.294	-10.85		4/16/98 18:09	59.888	0.055
4/16/98 20:13	60.297	-20.005		4/16/98 18:13	59.907	-0.06
4/16/98 20:17	59.814	-27.435		4/16/98 18:17	59.908	-0.07
4/16/98 20:21	← 58.124	-28.8	· · · · · · · ·	4/16/98 18:21	59.899	-0.03
4/16/98 20:25	56.296	-29.395		4/16/98 18:25	59.895	0.07
4/16/98 20:29	54.327	-29.045		4/16/98 18:29	59.894	0.055
4/16/98 20:33	52.364	-28.62		4/16/98 18:33	59.893	-0.055
4/16/98 20:37	50.417	-28.43		4/16/98 18:37	59.909	0.035
4/16/98 20:41	48.518	-28.415		4/16/98 18:41	59.905	-0.075
4/16/98 20:45	46.64	-28.54		4/16/98 18:45	59.882	0.02
4/16/98 20:49	44.731	-28.585		4/16/98 18:49	59.916	-0.07.
4/16/98 20:53	42.835	-28.605		4/16/98 18:53	59.89	0.04
4/16/98 20:57	40.932	-28.605		4/16/98 18:57	59.886	0.025
4/16/98 21:01	39.014	-28.6		4/16/98 19:01	59.902	-0.17
4/16/98 21:05	37.114	-28.655		4/16/98 19:05	59.898	-0.095
4/16/98 21:09	35.211	-28.605		4/16/98 19:09	59.891	0.14
4/16/98 21:13	33.294	-28.825		4/16/98 19:13	59.868	0.16
4/16/98 21:17	31.383	-28.815		4/16/98 19:17	59.879	0.015
4/16/98 21:21	29.49	-28.915		4/16/98 19:21	59.919	-0.18
4/16/98 21:25	27.529	-28.725		4/16/98 19:25	59.9	-0.025
4/16/98 21:29	25.62	-28.745		4/16/98 19:29	59.882	0.065
4/16/98 21:33	23.707	-28.755		4/16/98 19:33	59.883	0.13
4/16/98 21:37	21.784	-28.515		4/16/98 19:37	59.895	0.065
4/16/98 21:41	19.871	-28.615		4/16/98 19:41	59.895	-0.035
4/16/98 21:45	17.956	-28.535		4/16/98 19:45	59.909	0.025
4/16/98 21:49	16.081	-28.69		4/16/98 19:49	59.908	0.045
4/16/98 21:53	14.148	-28.598		4/16/98 19:53	59.888	-0.035

4/16/98 21:57	12.249	-28.589		4/16/98 19:57	59.914	-0.13
4/16/98 22:01	10.343	-28.6325		4/16/98 20:01	59.917	-0.225
4/16/98 22:05	8.4284	-28.6405		4/16/98 20:05	59.881	-3.53
4/16/98 22:09	6.5312	-28.6706		4/16/98 20:09	59.888	-12.31
4/16/98 22:13	4.6165	-28.676		4/16/98 20:13	59.872	-22.265
4/16/98 22:17	2.7003	-28.477		4/16/98 20:17	59.175	-29.025
4/16/98 22:21	0.79708	-28.7639		4/16/98 20:21	57.426	-30.015
4/16/98 22:25	-1.1187	-28.5555		4/16/98 20:25	55.419	-29.34
4/16/98 22:29	-2.9951	-28.5875		4/16/98 20:29	53.37	-28.505
4/16/98 22:33	-4.9557	-28.3765		4/16/98 20:33	51.423	-28.38
4/16/98 22:37	-6.8298	-28.641		4/16/98 20:37	49.551	-28.48
4/16/98 22:41	-8.7126	-28.792		4/16/98 20:41	47.669	-28.765
4/16/98 22:45	-10.631	-28.835		4/16/98 20:45	45.747	-28.585
4/16/98 22:49	-12.558	-28.675		4/16/98 20:49	43.855	-28.63
4/16/98 22:53	-14.471	-28.765		4/16/98 20:53	41.916	-28.555
4/16/98 22:57	-16.398	-28.69		4/16/98 20:57	40.03	-28.655
4/16/98 23:01	-18.293	-28.71		4/16/98 21:01	38.129	-28.75
4/16/98 23:05	-20.224	-28.59		4/16/98 21:05	36.205	-28.605
4/16/98 23:09	-22.136	-17.695		4/16/98 21:09	34.299	-28.655
4/16/98 23:13	-24.035	-20.975		4/16/98 21:13	32.379	-28.88
4/16/98 23:17	-25.942	-15.155		4/16/98 21:17	30.484	-28.865
4/16/98 23:21	-25.675	-18.465		4/16/98 21:21	28.568	-28.87
4/16/98 23:25	-28.23	-6.665		4/16/98 21:25	26.603	-28.575
4/16/98 23:29	-28.973	-3.315		4/16/98 21:29	24.711	-28.805
4/16/98 23:33	-29.368	-1.47		4/16/98 21:33	22.794	-28.705
4/16/98 23:37	₹ -29.563	-0.505	6 A security	4/16/98 21:37	20.888	-28.78
4/16/98 23:41	-29.636	-0.365		4/16/98 21:41	18.95	-28.565
4/16/98 23:45	-29.662	-0.24		4/16/98 21:45	17.053	-28.805
4/16/98 23:49	-29.664	-0.215		4/16/98 21:49	15.132	-28.537
4/16/98 23:53	-29.709	-0.09		4/16/98 21:53	13.237	-28.654
4/16/98 23:57	-29.71	0.065		4/16/98 21:57	11.292	-28.4345
4/17/98 0:01	-29.707	-0.05		4/16/98 22:01	9.4246	-28.7995
4/17/98 0:05	-29.727	0.09		4/16/98 22:05	7.5062	-28.918.
4/17/98 0:09	-29.697	-0.02		4/16/98 22:09	5.6051	-28.8404
4/17/98 0:13	-29.717	0.115		4/16/98 22:13	3.6647	-28.958
4/17/98 0:17	-29.709	0.135		4/16/98 22:17	1.7226	-28.541
4/17/98 0:21	-29.701	0.255		4/16/98 22:21	-0.16298	-28.8281
4/17/98 0:25	-29.694	0.02		4/16/98 22:25	-2.1269	-28.512
4/17/98 0:29	-29.682	0.14		4/16/98 22:29	-3.9856	-28.878
4/17/98 0:33	-29.65	0.02		4/16/98 22:33	-5.9286	-28.102
4/17/98 0:37	-29.69	0.045		4/16/98 22:37	-7.8293	-28.0335
4/17/98 0:41	-29.654	-0.315		4/16/98 22:41	-9.7612	<i>-</i> 27.849
4/17/98 0:45	-29.646	-0.005		4/16/98 22:45	-11.549	-28.335
4/17/98 0:49	-29.681	0.155	•	4/16/98 22:49	-13.436	-28.62
4/17/98 0:53	-29.717	0.345		4/16/98 22:53	-15.331	-28.59
4/17/98 0:57	-29.647	0.0.0		4/16/98 22:57	-17.216	-28.635
4/17/98 1:01	-29.65	0.07		4/16/98 23:01	-19.16	-28.425
4/17/98 1:05	-29.648	-0.12		4/16/98 23:05	-21.049	-25.515
4/17/98 1:09	-29.647	0.04		4/16/98 23:09	-22.943	-18.31
		<b></b> .		_		

4/17/98 1:13	-29.636	-0.085		4/16/98 23:13	-24.845	<i>-</i> 20.55
4/17/98 1:17	-29.672	0.045		4/16/98 23:17	-26.152	-16.565
4/17/98 1:21	-29.639	-0.22		4/16/98 23:21	-26.605	-15.34
4/17/98 1:25	-29.653	-0.07		4/16/98 23:25	-28.955	-4.215
4/17/98 1:29	-29.663	-0.175		4/16/98 23:29	-29.465	-1.915
4/17/98 1:33	-29.683	0.14		4/16/98 23:33	-29.673	-0.885
4/17/98 1:37	-29.667	-0.195		4/16/98 23:37	-29.798	-0.385
4/17/98 1:41	-29.698	-0.04		4/16/98 23:41	-29.848	-0.125
4/17/98 1:45	-29.655	-0.135		4/16/98 23:45	-29.85	-0.12
4/17/98 1:49	-29.706	0.12		4/16/98 23:49	-29.875	0.135
4/17/98 1:53	-29.706	0.025		4/16/98 23:53	-29.873	0.14
4/17/98 1:57	-29.682	-0.07		4/16/98 23:57	-29.874	0.065
4/17/98 2:01	-29.682	-0.05		4/17/98 0:01	-29.848	-0.165
4/17/98 2:05	-29.701	-0.05		4/17/98 0:05	-29.845	-0.14
4/17/98 2:09	-29.696	-0.075		4/17/98 0:09	-29.861	-0.025
4/17/98 2:13	-29.692	-0.095		4/17/98 0:13	-29.881	0.115
4/17/98 2:17	-29.711	0.14	3	4/17/98 0:17	-29.873	0.02
4/17/98 2:21	-29.711	-0.125		4/17/98 0:21	-29.866	0.14
4/17/98 2:25	-29.711	0.02		4/17/98 0:25	-29.858	0.02
4/17/98 2:29	-29.683	-0.23		4/17/98 0:29	-29.869	0.135
4/17/98 2:33	-29.736	0.135		4/17/98 0:33	-29.838	-0.095
4/17/98 2:37	-29.707	0.09		4/17/98 0:37	-29.854	-0.075
4/17/98 2:41	<i>-</i> 29.729	0.18		4/17/98 0:41	-29.842	-0.315
4/17/98 2:45	-29.709	-0.06		4/17/98 0:45	-29.857	-0.12
4/17/98 2:49	-29.689	-0.06		4/17/98 0:49	-29.869	0.04
4/17/98 2:53	<b>-29.693</b>	-0.06	· · · · · · · · · · · · · · · · · · ·	4/17/98 0:53	-29.905	0.23
4/17/98 2:57	-29.721	0.035		4/17/98 0:57	-29.881	0.47
4/17/98 3:01	-29.701	-0.105		4/17/98 1:01	-29.861	0.185
4/17/98 3:05	-29.705	-0.015		4/17/98 1:05	-29.859	0.235
4/17/98 3:09	<i>-</i> 29.714	-0.13		4/17/98 1:09	-29.787	-0.2
4/17/98 3:13	-29.722	0.24		4/17/98 1:13	-29.824	-0.085
4/17/98 3:17	-29.708	-0.085		4/17/98 1:17	-29.812	-0.31
4/17/98 3:21	-29.74	4.04		4/17/98 1:21	-29.827	-0.335.
4/17/98 3:25	-29.674	12.955		4/17/98 1:25	-29.841	-0.065
4/17/98 3:29	-29.725	22.395		4/17/98 1:29	-29.874	0.06
4/17/98 3:33	-28.932	27.705		4/17/98 1:33	-29.894	0.14
4/17/98 3:37	-27.083	27.835		4/17/98 1:37	-29.854	-0.2
4/17/98 3:41	-25.246	28.115	·	4/17/98 1:41	-29.862	-0.04
4/17/98 3:45	-23.391	28.395		4/17/98 1:45	-29.866	0.1
4/17/98 3:49	-21.516	28.445		4/17/98 1:49	-29.894	0.125
4/17/98 3:53	-19.623	28.44		4/17/98 1:53	-29.87	0.025
4/17/98 3:57	-17.712	28.33	•	4/17/98 1:57	-29.846	-0.19
4/17/98 4:01	-15.827	28.615	• • •	4/17/98 2:01	-29.869	-0.055
4/17/98 4:05	-13.935	28.4035		4/17/98 2:05	-29.865	0.065
4/17/98 4:09	-12.046	28.3665		4/17/98 2:09	-29.884	0.045
4/17/98 4:13	-10.104	28.134		4/17/98 2:13	-29.88	0.025
4/17/98 4:17	-8.2543	28.3215		4/17/98 2:17	<b>-</b> 29.852	-0.095
4/17/98 4:21	-6.3727	28.19295		4/17/98 2:21	<b>-</b> 29.875	0.11
4/17/98 4:25	-4.4772	28.4045		4/17/98 2:25	-29.875	-0.095

4/17/98 4:29	-2.59	28.289	4/17/98 2:29	-29.871	0.005
4/17/98 4:33	-0.73411	28.50505	4/17/98 2:33	-29.853	0.135
4/17/98 4:37	1.2037	28.3175	4/17/98 2:37	-29.894	0.205
4/17/98 4:41	3.0678	28.531	4/17/98 2:41	-29.87	0.3
4/17/98 4:45	4.9669	28.4855	4/17/98 2:45	-29.826	-0.06
4/17/98 4:49	6.8672	28.449	4/17/98 2:49	-29.853	-0.18
4/17/98 4:53	8.774	28.335	4/17/98 2:53	-29.81	-0.18
4/17/98 4:57	10.664	28.355	4/17/98 2:57	-29.838	-0.085
4/17/98 5:01	12.557	28.22	4/17/98 3:01	-29.889	0.245
4/17/98 5:05	14.441	28.28	4/17/98 3:05	-29.846	-0.13
4/17/98 5:09	16.335	28.355	4/17/98 3:09	-29.855	-0.125
4/17/98 5:13	18.201	28.655	4/17/98 3:13	-29.84	0.01
4/17/98 5:17	20.097	28.56	4/17/98 3:17	-29.872	0.15
4/17/98 5:21	22.006	28.79	4/17/98 3:21	-29.88	4.505
4/17/98 5:25	23.932	28.595	4/17/98 3:25	-29.838	13.54
4/17/98 5:29	25.809	28.605	4/17/98 3:29	-29.842	22.865
4/17/98 5:33	27.764	28.31	4/17/98 3:33	-28.979	27.94
4/17/98 5:37	29.651	28.41	4/17/98 3:37	-27.13	28.185
4/17/98 5:41	31.53	28.385	4/17/98 3:41	-25.269	28.345
4/17/98 5:45	33.426	28.355	4/17/98 3:45	-23.391	28.28
4/17/98 5:49	35.333	28.305	4/17/98 3:49	<b>-21.493</b>	28.105
4/17/98 5:53	37.207	28.48	4/17/98 3:53	-19.6	28.1
4/17/98 5:57	39.097	28.43	4/17/98 3:57	-17.735	28.22
4/17/98 6:01	40.994	28.425	4/17/98 4:01	-15.872	28.62
4/17/98 6:05	42.903	28.325	4/17/98 4:05	-13.98	28.6285
4/17/98 6:09	44.783	28.445	4/17/98 4:09	-12.091	28.7025
4/17/98 6:13	46.679	28.32	4/17/98 4:13	-10.148	28.4645
4/17/98 6:17	48.568	28.22	4/17/98 4:17	-8.2543	28.4315
4/17/98 6:21	50.472	28.02	4/17/98 4:21	-6.3505	28.1913
4/17/98 6:25	52.343	28.055	4/17/98 4:25	-4.4551	28.403
4/17/98 6:29	54.212	26.105	4/17/98 4:29	-2.568	28.504
4/17/98 6:33	56.076	23.885	4/17/98 4:33	-0.71224	28.7197
4/17/98 6:37	57.954	16.11	4/17/98 4:37	1.2255	28.6385.
4/17/98 6:41	59.433	6.2	4/17/98 4:41	3.1328	28.527
4/17/98 6:45	60.853	<i>-</i> 1.865	4/17/98 4:45	5.0317	28.4815
4/17/98 6:49	61.176	-3.95	4/17/98 4:49	6.9532	28.334
4/17/98 6:53	60.673	-1.515	4/17/98 4:53	8.8382	28.334
4/17/98 6:57	60.48	-0.82	4/17/98 4:57	10.728	28.355
4/17/98 7:01	60.386	-0.31	4/17/98 5:01	12.62	28.43
4/17/98 7:05	60.37	-0.34	4/17/98 5:05	14.505	28.48
4/17/98 7:09	60.316	-0.13	4/17/98 5:09	16.399	28.345
4/17/98 7:13	60.324	-0.29	4/17/98 5:13	18.306	28.44
4/17/98 7:17	60.302	-0.105	4/17/98 5:17	20.201	28.45
4/17/98 7:21	60.29	0.045	4/17/98 5:21	22.068	28.79
4/17/98 7:25	60.266	0.08	4/17/98 5:25	23.994	28.9
4/17/98 7:29	60.281	-0.005	4/17/98 5:29	25.891	28.705
4/17/98 7:33	60.299	-0.04	4/17/98 5:33	27.826	28.61
4/17/98 7:37	60.282	0.005	4/17/98 5:37	29.774	28.405
4/17/98 7:41	60.28	0.145	4/17/98 5:41	31.632	28.68

4/17/98 7:45	60.291	-0.065		4/17/98 5:45	33.548	28.65
4/17/98 7:49	60.283	0.16		4/17/98 5:49	35.455	28.595
4/17/98 7:53	60.309	0.005		4/17/98 5:53	37.368	28.375
4/17/98 7:57	60.278	0.14		4/17/98 5:57	39.278	28.32
4/17/98 8:01	60.315	0.1		4/17/98 6:01	41.174	28.415
4/17/98 8:05	60.31	0.1		4/17/98 6:05	43.043	28.515
4/17/98 8:09	60.306	0.09		4/17/98 6:09	44.942	28.635
4/17/98 8:13	60.335	-0.01		4/17/98 6:13	46.857	28.61
4/17/98 8:17	60.33	0.045		4/17/98 6:17	48.746	28.7
4/17/98 8:21	60.324	-0.035		4/17/98 6:21	50.669	28.785
4/17/98 8:25	60.333	-0.14		4/17/98 6:25	52.579	28.525
4/17/98 8:29	60.339	-0.11		4/17/98 6:29	54.486	25.99
4/17/98 8:33	60.317	0.05		4/17/98 6:33	56.426	22.81
4/17/98 8:37	60.305	-0.035		4/17/98 6:37	58.284	13.01
4/17/98 8:41	60.317	-0.065		4/17/98 6:41	59.684	2.53
4/17/98 8:45	60.327	-0.06		4/17/98 6:45	60.988	-4.86
4/17/98 8:49	60.298	0.02		4/17/98 6:49	60.886	-4.815
4/17/98 8:53	60.304	0.03		4/17/98 6:53	60.19	-1.515
4/17/98 8:57	60.315	0.1		4/17/98 6:57	60.016	-0.625
4/17/98 9:01	60.302	-0.04		4/17/98 7:01	59.923	-0.215
4/17/98 9:05	60.31	-0.06		4/17/98 7:05	59.887	-0.05
4/17/98 9:09	60.335	-0.065		4/17/98 7:09	59.891	-0.13
4/17/98 9:13	60.294	0.035		4/17/98 7:13	59.88	-0.1
4/17/98 9:17	60.298	0.04		4/17/98 7:17	59.877	-0.105
4/17/98 9:21	60.322	-0.055		4/17/98 7:21	59.865	0.045
4/17/98 9:25	← 60.301	0.115		4/17/98 7:25	59.86	-0.015
4/17/98 9:29	60.306	-0.075	-	4/17/98 7:29	59.856	-0.005
4/17/98 9:33	60.311	0.015		4/17/98 7:33	59.874	0.055
4/17/98 9:37	60.324	-0.015		4/17/98 7:37	59.857	0.1
4/17/98 9:41	60.291	0.165		4/17/98 7:41	59.855	0.05
4/17/98 9:45	60.314	0.005		4/17/98 7:45	59.885	-0.165
4/17/98 9:49	60.321	-0.05		4/17/98 7:49	59.877	-0.035
4/17/98 9:53	60.324	-0.035		4/17/98 7:53	59.865	0.1.
4/17/98 9:57	60.315	0.08		4/17/98 7:57	59.852	0.05
4/17/98 10:01	60.311	0.05		4/17/98 8:01	59.87	0.005
4/17/98 10:05	60.317	0.045		4/17/98 8:05	59.885	-0.09
4/17/98 10:09	60.331	-0.015		4/17/98 8:09	59.862	0.085
4/17/98 10:13	60.321	-0.095		4/17/98 8:13	59.871	-0.105
4/17/98 10:17	60.326	0.025		4/17/98 8:17	59.867	-0.15
4/17/98 10:21	60.328	-0.025		4/17/98 8:21	59.879	-0.03
4/17/98 10:25	60.302	0.21		4/17/98 8:25	59.85	0.05
4/17/98 10:29	60.331	-0.095		4/17/98 8:29	59.837	0.08
4/17/98 10:33	60.323	-0.105		4/17/98 8:33	59.873	0.045
4/17/98 10:37	60.344	-1.3		4/17/98 8:37	59.86	0.065
4/17/98 10:41	60.312	-5.905		4/17/98 8:41	59.853	0.13
4/17/98 10:45	60.302	-12.68		4/17/98 8:45	59.882	0.04
4/17/98 10:49	60.084	-17.18		4/17/98 8:49	59.873	0.02
4/17/98 10:53	59.131	-19.845		4/17/98 8:53	59.879	0.03
4/17/98 10:57	57.766	-17.085		4/17/98 8:57	59.89	-0.095
11755 15.01	01.700					

4/17/98 11:01	56.648	-16.685		4/17/98 9:01	59.877	-0.04
4/17/98 11:05	55.162	-15.19		4/17/98 9:05	59.885	-0.0 <del>4</del> -0.155
4/17/98 11:09	54.349	-19.415		4/17/98 9:09	59.871	0.03
4/17/98 11:13	53.311	-23.155		4/17/98 9:13	59.869	-0.06
4/17/98 11:17	52.124	-26.335		4/17/98 9:17	59.854	0.23
4/17/98 11:21	50.466	-30.09		4/17/98 9:21	59.877	0.23
4/17/98 11:25	48.68	-33.745		4/17/98 9:25	59.857	0.14
4/17/98 11:29	46.857	-35.97		4/17/98 9:29	59.637	0.205
4/17/98 11:33	44.448	-34.13		4/17/98 9:33	59.905	-0.08
4/17/98 11:37	41.931	-31.585		4/17/98 9:37	59.898	
4/17/98 11:41	39.663	-29.92		4/17/98 9:31		-0.01
4/17/98 11:45	37.622	-29.43		4/17/98 9:45	59.905	-0.03
4/17/98 11:49	35.614	-29.43 -29.04			59.889	0.005
4/17/98 11:53				4/17/98 9:49	59.896	0.05
4/17/98 11:57	33.679	-28.95		4/17/98 9:53	59.899	-0.13
4/17/98 12:01	31.736	-28.98		4/17/98 9:57	59.89	-0.02
	29.806	-28.905		4/17/98 10:01	59.906	-0.05
4/17/98 12:05	27.889	-28.855		4/17/98 10:05	59.873	0.04
4/17/98 12:09	25.94	-28.655		4/17/98 10:09	59.886	0.08
4/17/98 12:13	24.025	-28.55		4/17/98 10:13	59.896	0.1
4/17/98 12:17	22.118	-28.54		4/17/98 10:17	59.881	0.125
4/17/98 12:21	20.209	-28.56		4/17/98 10:21	59.902	-0.02
4/17/98 12:25	18.315	-28.585		4/17/98 10:25	59.916	-0.08
4/17/98 12:29	16.41	-28.595		4/17/98 10:29	59.906	0
4/17/98 12:33	14.497	-28.6235		4/17/98 10:33	59.898	0.09
4/17/98 12:37	12.598	-28.5485		4/17/98 10:37	59.9	-1.69
4/17/98 12:41	10.691	-28.561	the second of the second	4/17/98 10:41	59.906	-7.655
4/17/98 12:45	8.7723	-28.5765		4/17/98 10:45	59.916	-16.385
4/17/98 12:49	6.8883	-28.698		4/17/98 10:49	59.562	-24.21
4/17/98 12:53	4.9788	-28.5353		4/17/98 10:53	58.375	-26.32
4/17/98 12:57	3.057	-28.4615		4/17/98 10:57	56.639	-24.47
4/17/98 13:01	1.1487	-28.5385		4/17/98 11:01	54.72	-21.76
4/17/98 13:05	-0.72826	-28.6562		4/17/98 11:05	53.111	-15.84
4/17/98 13:09	-2.6353	-28.9445		4/17/98 11:09	51.745	-15.95 _.
4/17/98 13:13	-4.559	-28.635		4/17/98 11:13	50.368	-19.615
4/17/98 13:17	-6.4595	-28.6825		4/17/98 11:17	49.943	-28.93
4/17/98 13:21	-8.4242	-28.339		4/17/98 11:21	48.555	-32.4
4/17/98 13:25	-10.286	-28.465	,	4/17/98 11:25	46.445	-31.78
4/17/98 13:29	-12.196	-28.62		4/17/98 11:29	44.157	-30.115
4/17/98 13:33	-14.092	-28.795		4/17/98 11:33	42.075	-29.23
4/17/98 13:37	-15.979	-28.92		4/17/98 11:37	40.089	-29.065
4/17/98 13:41	-17.92	-28.71		4/17/98 11:41	38.134	-28.785
4/17/98 13:45	-19.851	-28.615		4/17/98 11:45	36.229	-28.795
4/17/98 13:49	-21.763	-19.515		4/17/98 11:49	34.276	-28.805
4/17/98 13:53	-23.662	-21.51		4/17/98 11:53	32.377	-29.025
4/17/98 13:57	-25.574	-16.41		4/17/98 11:57	30.47	-28.95
4/17/98 14:01	-25.666	-18.335		4/17/98 12:01	28.515	-28.675
					00 570	
4/17/98 14:05	-27.964	-7.61		4/17/98 12:05	26.572	-28.415
4/17/98 14:05 4/17/98 14:09 4/17/98 14:13	-27.964 -28.856 -29.333	-7.61 -3.675 -1.585		4/17/98 12:05 4/17/98 12:09 4/17/98 12:13	26.572 24.68 22.78	-28.415 -28.735 -28.835

4/17/98 14:17	-29.486	-0.88			4/17/98 12:17	20.889	-28.825
4/17/98 14:21	-29.591	-0.435			4/17/98 12:21	18.933	-28.53
4/17/98 14:25	<i>-</i> 29.65	-0.195			4/17/98 12:25	17.013	-28.665
4/17/98 14:29	<b>-</b> 29.662	-0.085			4/17/98 12:29	15.124	-28.675
4/17/98 14:33	-29.678	-0.13			4/17/98 12:33	13.227	-28.705
4/17/98 14:37	-29.689	-0.075			4/17/98 12:37	11.28	-28.525
4/17/98 14:41	-29.679	-0.14			4/17/98 12:41	9.389	-28.646
4/17/98 14:45	-29.704	-0.15			4/17/98 12:45	7.486	-28.442
4/17/98 14:49	-29.704	0.185			4/17/98 12:49	5.575	-28.3469
4/17/98 14:53	-29.707	0.07			4/17/98 12:53	3.6598	-28.6215
4/17/98 14:57	-29.734	0.17			4/17/98 12:57	1.7976	-28.8755
4/17/98 15:01	-29.667	-0.18			4/17/98 13:01	-0.094387	-28.8426
4/17/98 15:05	-29.693	-0.16			4/17/98 13:05	-2.0645	-28.5235
4/17/98 15:09	-29.7	-0.02			4/17/98 13:09	-3.9775	-28.701
4/17/98 15:13	-29.703	0.12			4/17/98 13:13	-5.8629	-28.1605
4/17/98 15:17	-29.725	-0.02			4/17/98 13:17	-7.7692	-28.099
4/17/98 15:21	-29.704	-0.7			4/17/98 13:21	-9.7177	-27.5265
4/17/98 15:25	<b>-</b> 29.679	-0.33			4/17/98 13:25	-11.495	-28.21
4/17/98 15:29	-29.729	0.115			4/17/98 13:29	-13.389	-28.355
4/17/98 15:33	-29.844	1.06			4/17/98 13:33	-15.223	-28.87
4/17/98 15:37	-29.745	0.61			4/17/98 13:37	-17.137	-28.89
4/17/98 15:41	-29.706	0.385			4/17/98 13:41	-19.06	-28.91
4/17/98 15:45	-29.632	0.005			4/17/98 13:45	-20.997	-25.325
4/17/98 15:49	<b>-</b> 29.623	0.07			4/17/98 13:49	-22.915	-19.45
4/17/98 15:53	-29.629	0.09			4/17/98 13:53	-24.842	-20.635
4/17/98 15:57	< <b>-</b> 29.631	0.115	*	_	4/17/98 13:57	-26.062	-16.665
<b>4/17/98 16:01</b>	-29.609	0.135			4/17/98 14:01	-26.805	-14.16
4/17/98 16:05	-29.611	0.16			4/17/98 14:05	-28.969	-3.755
4/17/98 16:09	-29.608	0.04			4/17/98 14:09	-29.395	-1.805
4/17/98 16:13	-29.582	0.06			4/17/98 14:13	<b>-</b> 29.637	-0.885
4/17/98 16:17	<b>-</b> 29.579	0.04			4/17/98 14:17	-29.72	-0.295
4/17/98 16:21	-29.6	0.04			4/17/98 14:21	-29.756	-0.08
4/17/98 16:25	-29.57	-0.33			4/17/98 14:25	-29.814	-0.08.
4/17/98 16:29	-29.571	-0.315			4/17/98 14:29	-29.779	0.03
4/17/98 16:33	-29.592	-0.08			4/17/98 14:33	<b>-</b> 29.772	-0.245
4/17/98 16:37	-29.636	0.295			4/17/98 14:37	-29.83	0.16
4/17/98 16:41	-29.634	0.135			4/17/98 14:41	-29.773	-0.14
4/17/98 16:45	-29.608	-0.045			4/17/98 14:45	-29.821	0.085
4/17/98 16:49	<i>-</i> 29.577	-0.155			4/17/98 14:49	-29.798	0.19
4/17/98 16:53	<i>-</i> 29.607	0.035			4/17/98 14:53	-29.801	0.07
4/17/98 16:57	-29.617	0.085			4/17/98 14:57	-29.804	0.05
4/17/98 17:01	-29.608	-0.075			4/17/98 15:01	-29.76	-0.185
4/17/98 17:05	-29.6	-0.085			4/17/98 15:05	-29.787	0.075
4/17/98 17:09	-29.6	-0.095	•		4/17/98 15:09	-29.794	-0.02
4/17/98 17:13	-29.623	0.135			4/17/98 15:13	-29.797	0.12
4/17/98 17:17	-29.617	0.07			4/17/98 15:17	-29.772	-0.84
4/17/98 17:21	-29.619	-0.035			4/17/98 15:21	-29.798	-0.35
4/17/98 17:25	-29.596	-0.26			4/17/98 15:25	-29.773	-0.09
4/17/98 17:29	-29.603	-0.13			4/17/98 15:29	-29.94	0.815

4/17/98 17:33	-29.626	0.18		4/17/98 15:33	-29.868	0.595
4/17/98 17:37	-29.648	0.01		4/17/98 15:37	-29.791	0.255
4/17/98 17:41	-29.629	0.085		4/17/98 15:41	-29.777	0.27
4/17/98 17:45	-29.59	-0.035		4/17/98 15:45	-29.749	0.12
4/17/98 17:49	-29.646	0.11		4/17/98 15:49	-29.74	0.07
4/17/98 17:53	-29.612	0.01		4/17/98 15:53	-29.723	0.09
4/17/98 17:57	-29.597	0.035		4/17/98 15:57	-29.725	0.235
4/17/98 18:01	-29.624	0.125		4/17/98 16:01	-29.726	0.135
4/17/98 18:05	-29.61	0.13		4/17/98 16:05	-29.705	-0.19
4/17/98 18:09	-29.59	4.65		4/17/98 16:09	-29.678	-0.315
4/17/98 18:13	-29.599	13.825		4/17/98 16:13	-29.699	0.06
4/17/98 18:17	-29.584	22.865		4/17/98 16:17	-29.743	-0.08
4/17/98 18:21	-28.66	27.67		4/17/98 16:21	-29.741	0.16
4/17/98 18:25	-26.834	27.885		4/17/98 16:25	-29.687	-0.215
4/17/98 18:29	-25.011	28.22		4/17/98 16:29	-29.759	0.39
4/17/98 18:33	-23.126	28.165		4/17/98 16:33	-29.709	0.04
4/17/98 18:37	-21.257	28.395		4/17/98 16:37	-29.73	-0.29
4/17/98 18:41	-19.367	28.39		4/17/98 16:41	-29.681	-0.095
4/17/98 18:45	-17.493	28.445		4/17/98 16:45	-29.701	0.07
4/17/98 18:49	-15.578	28.2295		4/17/98 16:49	-29.788	0.43
4/17/98 18:53	-13.689	28.258		4/17/98 16:53	<b>-</b> 29.7	0.035
4/17/98 18:57	-11.804	28.265		4/17/98 16:57	-29.687	-0.03
4/17/98 19:01	-9.9321	28.407		4/17/98 17:01	-29.702	-0.075
4/17/98 19:05	-8.0374	28.194		4/17/98 17:05	-29.693	-0.205
4/17/98 19:09	-6.151	28.31165		4/17/98 17:09	-29.693	-0.215
4/17/98 19:13	< <b>-4.2507</b>	28.209	1 4 1 4 2 <u> </u>	4/17/98 17:13	-29.717	0.015
4/17/98 19:17	-2.3986	28.4365		4/17/98 17:17	-29.734	-0.165
4/17/98 19:21	-0.48867	28.20635		4/17/98 17:21	-29.736	-0.15
4/17/98 19:25	1.3911	28.3495		4/17/98 17:25	-29.714	-0.26
4/17/98 19:29	3.2887	28.33		4/17/98 17:29	-29.767	0.105
4/17/98 19:33	5.1526	28.442		4/17/98 17:33	-29.766	-0.06
4/17/98 19:37	7.061	28.425		4/17/98 17:37	-29.766	0.135
4/17/98 19:41	8.9547	28.4115		4/17/98 17:41	-29.746	0.085
4/17/98 19:45	10.841	28.505		4/17/98 17:45	-29.778	0.205
4/17/98 19:49	12.746	28.445		4/17/98 17:49	-29.739	0.105
4/17/98 19:53	14.637	28.525		4/17/98 17:53	-29.729	-0.105
4/17/98 19:57	16.542	28.085		4/17/98 17:57	-29.737	0.03
4/17/98 20:01	18.435	23.725	•	4/17/98 18:01	-29.718	0.01
4/17/98 20:05	20.342	17.015		4/17/98 18:05	-29.75	1.065
4/17/98 20:09	22.159	2.545		4/17/98 18:09	-29.731	9.445
4/17/98 20:13	23.18	-5.58		4/17/98 18:13	-29.716	18.365
4/17/98 20:17	23.745	-8.6		4/17/98 18:17	-29.537	26.915
4/17/98 20:21	22.668	-3.7		4/17/98 18:21	-27.842	27.73
4/17/98 20:25	22.064	-1.265		4/17/98 18:25	-26.043	28.29
4/17/98 20:29	22.025	-1.45		4/17/98 18:29	-24.154	28.27
4/17/98 20:33	21.928	-1.325		4/17/98 18:33	-22.296	28.445
4/17/98 20:37	21.811	-1.035		4/17/98 18:37	-20.385	28.335
4/17/98 20:41	21.735	-0.825		4/17/98 18:41	-18.5	28.445
4/17/98 20:45	21.663	-0.76		4/17/98 18:45	-16.607	28.385

4/17/98 20:49	21.604	-0.57		4/17/98 18:49	-14.718	28.394
4/17/98 20:53	21.57	-0.505		4/17/98 18:53	-12.811	28.313
4/17/98 20:57	21.511	-0.31		4/17/98 18:57	-10.93	28.431
4/17/98 21:01	21.49	-0.19		4/17/98 19:01	-9.0392	28.238
4/17/98 21:05	21.469	-0.085		4/17/98 19:05	-7.1484	28.2455
4/17/98 21:09	21.449	-0.09		4/17/98 19:09	-5.2438	28.14325
4/17/98 21:13	21.452	0		4/17/98 19:13	-3.3916	28.371
4/17/98 21:17	21.452	0		4/17/98 19:17	-1.4993	28.4865
4/17/98 21:21	21.431	0.105		4/17/98 19:21	0.38485	28.47375
4/17/98 21:25	21.452	0.105		4/17/98 19:25	2.2826	28.615
4/17/98 21:29	21.452	0.21		4/17/98 19:29	4.198	28.4865
4/17/98 21:33	21.452	0.19		4/17/98 19:33	6.0796	28.382
4/17/98 21:37	21.473	0.295		4/17/98 19:37	8.0056	28.367
4/17/98 21:41	21.494	0.275		4/17/98 19:41	9.8953	28.4585
4/17/98 21:45	21.49	0.4		4/17/98 19:45	11.756	28.555
4/17/98 21:49	21.532	0.31		4/17/98 19:49	13.679	28.495
4/17/98 21:53	21.549	0.31		4/17/98 19:53	15.587	28.575
4/17/98 21:57	21.57	0.31		4/17/98 19:57	17.467	25.435
4/17/98 22:01	21.594	0.32		4/17/98 20:01	19.378	17.14
4/17/98 22:05	21.611	0.315		4/17/98 20:05	21.302	4.22
4/17/98 22:09	21.632	0.29		4/17/98 20:09	22.554	-2.235
4/17/98 22:13	21.658	0.215		4/17/98 20:13	22.806	-3.605
4/17/98 22:17	21.674	0.21		4/17/98 20:17	22.146	0.02
4/17/98 22:21	21.69	0.335		4/17/98 20:21	22.107	-0.475
4/17/98 22:25	21.701	0.365		4/17/98 20:25	22.085	-0. <del>4</del> 75 -0.955
4/17/98 22:29	21.718	0.265		4/17/98 20:29	22.15	-0.365 -1.765
4/17/98 22:33	21.757	0.205		4/17/98 20:33	22.012	-1.54
4/17/98 22:37	21.774	0.273		4/17/98 20:37	21.894	-1.24
4/17/98 22:41	21.774	0.425		4/17/98 20:41	21.797	-0.925
4/17/98 22:45	21.812	0.423		4/17/98 20:45	21.704	-0.545
4/17/98 22:49	21.812	0.13		4/17/98 20:49	21.646	-0.36
4/17/98 22:53	21.856	0.235		4/17/98 20:53	21.612	-0.295
4/17/98 22:57	21.85	0.105		4/17/98 20:57	21.595	-0.233
4/17/98 23:01	21.861	0.193		4/17/98 21:01	21.574	-0.09
4/17/98 23:05	21.877	0.22		4/17/98 21:05	21.553	0.12
4/17/98 23:09	21.889	0.245		4/17/98 21:09	21.573	0.125
4/17/98 23:13	21.905	0.245		4/17/98 21:13	21.556	0.123
4/17/98 23:17	21.922	0.23	•	4/17/98 21:17	21.577	0.105
4/17/98 23:21	21.922	0.25		4/17/98 21:21	21.598	0.105
4/17/98 23:25	21.955	0.133		4/17/98 21:25	21.598	0.100
4/17/98 23:29	21.968	0.13		4/17/98 21:29	21.598	0.315
4/17/98 23:33	21.969	0.075		4/17/98 21:33	21.619	0.29
4/17/98 23:37	21.989	0.075		4/17/98 21:37	21.64	0.185
4/17/98 23:41	21.961	0.06		4/17/98 21:41	21.661	0.165
4/17/98 23:45	21.976	0.103		4/17/98 21:45	21.677	0.105
4/17/98 23:49	21.964 21.997	0.17		4/17/98 21:49	21.677	0.295
4/17/98 23:53	21.997	-0.035		4/17/98 21:53	21.694	0.315
4/17/98 23:57	22.009	-0.035 -0.015		4/17/98 21:57	21.736	0.105
4/18/98 0:01	22.016	0.013		4/17/98 22:01	21.74	0.103
7/ 10/30 U.U I	22.01	0.08		7/1/190 22.01	41.17	V.UZ

4/18/98 0:05	22.002	0.09		4/17/98 22:05	21.757	0.31
4/18/98 0:09	22.015	0.195		4/17/98 22:09	21.757	0.29
4/18/98 0:13	22.028	-0.01		4/17/98 22:13	21.804	0.21
4/18/98 0:17	22.02	0.115		4/17/98 22:17	21.819	0.12
4/18/98 0:21	22.054	-0.01		4/17/98 22:21	21.815	0.125
4/18/98 0:25	22.026	0.09		4/17/98 22:25	21.846	0.16
4/18/98 0:29	22.043	-0.035		4/17/98 22:29	21.843	0.26
4/18/98 0:33	22.052	0.09		4/17/98 22:33	21.84	0.28
4/18/98 0:37	22.044	-0.01		4/17/98 22:37	21.878	0.2
4/18/98 0:41	22.036	-0.01		4/17/98 22:41	21.895	0.115
4/18/98 0:45	22.07	-0.22		4/17/98 22:45	21.896	0.29
4/18/98 0:49	22.042	-0.015		4/17/98 22:49	21.918	0.13
4/18/98 0:53	22.034	0.09		4/17/98 22:53	21.918	0.21
4/18/98 0:57	22.026	-0.01		4/17/98 22:57	21.954	0.09
4/18/98 1:01	22.039	-0.03		4/17/98 23:01	21.944	0.225
4/18/98 1:05	22.052	-0.135	•	4/17/98 23:05	21.96	0.12
4/18/98 1:09	22.024	0.07		4/17/98 23:09	21.972	0.04
4/18/98 1:13	22.033	0.01		4/17/98 23:13	21.989	0.04
4/18/98 1:17	22.025	0.01		4/17/98 23:17	21.984	0.025
4/18/98 1:21	22.038	-0.095		4/17/98 23:21	21.98	0.05
4/18/98 1:25	22.035	0.005		4/17/98 23:25	21.997	0.02
4/18/98 1:29	22.027	0.005		4/17/98 23:29	21.989	0.14
4/18/98 1:33	22.019	-0.075		4/17/98 23:33	21.99	-0.03
4/18/98 1:37	22.036	-0.075		4/17/98 23:37	22.001	0.08
4/18/98 1:41	22.028	-0.075		4/17/98 23:41	22.017	-0.04
4/18/98 1:45	22.004	0.05	Section (Section )	4/17/98 23:45	21.984	0.065
4/18/98 1:49	22.021	-0.08		4/17/98 23:49	22.017	-0.14
4/18/98 1:53	22.013	0		4/17/98 23:53	22.009	-0.035
4/18/98 1:57	22.014	-0.025		4/17/98 23:57	21.997	0.09
4/18/98 2:01	22.005	-0.15		4/18/98 0:01	21.989	-0.01
4/18/98 2:05	22.013	-0.075		4/18/98 0:05	22.002	-0.01
4/18/98 2:09	22.009	-0.07		4/18/98 0:09	22.015	-0.115
4/18/98 2:13	21.975	0.05		4/18/98 0:13	21.987	-0.015
4/18/98 2:17	21.998	-0.11		4/18/98 0:17	22	0.005
4/18/98 2:21	21.995	-0.015		4/18/98 0:21	21.992	-0.015
4/18/98 2:25	21.985	-0.11		4/18/98 0:25	21.984	-0.01
4/18/98 2:29	21.976	0.04		4/18/98 0:29	22.001	-0.135
4/18/98 2:33	21.992	-0.19		4/18/98 0:33	21.989	-0.115
4/18/98 2:37	21.963	0.015		4/18/98 0:37	21.982	-0.015
4/18/98 2:41	21.984	-0.03		4/18/98 0:41	21.974	-0.01
4/18/98 2:45	21.954	-0.025		4/18/98 0:45	21.966	-0.01
4/18/98 2:49	21.966	-0.13		4/18/98 0:49	21.979	-0.01
4/18/98 2:53	21.978	-0.21		4/18/98 0:53	21.972	-0.12
4/18/98 2:57	21.949	0		4/18/98 0:57	21.964	-0.015
4/18/98 3:01	21.94	-0.1		4/18/98 1:01	21.977	-0.135
4/18/98 3:05	21.936	-0.015	•	4/18/98 1:05	21.948	0.075
4/18/98 3:09	21.949	-0.12		4/18/98 1:09	21.961	-0.03
4/18/98 3:13	21.92	0.005		4/18/98 1:13	21.95	0.005
4/18/98 3:17	21.933	-0.125		4/18/98 1:17	21.963	-0.095

4/18/98 3:21	21.925	-0.095		4/18/98 1:21	21.955	-0.095
4/18/98 3:25	21.923	-0.093		4/18/98 1:25	21.951	-0.095
4/18/98 3:29	21.921	-0.11		4/18/98 1:29	21.944	-0.000
4/18/98 3:33	21.906	-0.08 -0.19		4/18/98 1:33	21.936	-0.1
				4/18/98 1:37	21.932	-0.08
4/18/98 3:37	21.899	0.015		4/18/98 1:41	21.932	-0.075 -0.075
4/18/98 3:41	21.892	-0.055		4/18/98 1:45	21.924	0.055
4/18/98 3:45	21.868	0.18		4/18/98 1:49		
4/18/98 3:49	21.902	-0.12			21.917	-0.08
4/18/98 3:53	21.881	-0.06		4/18/98 1:53	21.909	0 13
4/18/98 3:57	21.904	-0.215		4/18/98 1:57	21.931	-0.13
4/18/98 4:01	21.878	-0.04		4/18/98 2:01	21.901	0.055
4/18/98 4:05	21.869	-0.015		4/18/98 2:05	21.909	-0.075
4/18/98 4:09	21.861	-0.015		4/18/98 2:09	21.905	-0.075
4/18/98 4:13	21.87	-0.08		4/18/98 2:13	21.912	-0.05
4/18/98 4:17	21.866	-0.1		4/18/98 2:17	21.894	-0.005
4/18/98 4:21	21.858	-0.185		4/18/98 2:21	21.89	-0.01
4/18/98 4:25	21.854	-0.08		4/18/98 2:25	21.902	-0.215
4/18/98 4:29	21.846	-0.08		4/18/98 2:29	21.893	-0.17
4/18/98 4:33	21.821	0.025		4/18/98 2:33	21.888	-0.085
4/18/98 4:37	21.838	0.005		4/18/98 2:37	21.859	0.015
4/18/98 4:41	21.83	-0.095		4/18/98 2:41	21.859	-0.03
4/18/98 4:45	21.826	-0.095		4/18/98 2:45	21.871	-0.03
4/18/98 4:49	21.839	-0.095		4/18/98 2:49	21.862	-0.025
4/18/98 4:53	21.811	-0.08		4/18/98 2:53	21.853	0
4/18/98 4:57	21.807	-0.08		4/18/98 2:57	21.865	-0.1
4/18/98 5:01	< 21.82	-0.165	· · · · · · · · · · · · · · · · · · ·	4/18/98 3:01	21.857	-0.1
4/18/98 5:05	21.795	-0.055	•	4/18/98 3:05	21.853	-0.12
4/18/98 5:09	21.791	-0.035		4/18/98 3:09	21.845	-0.225
4/18/98 5:13	21.787	-0.035		4/18/98 3:13	21.837	-0.1
4/18/98 5:17	21.784	-0.04		4/18/98 3:17	21.829	-0.125
4/18/98 5:21	21.784	-0.125		4/18/98 3:21	21.8	0.01
4/18/98 5:25	21.78	-0.105		4/18/98 3:25	21.817	-0.005
4/18/98 5:29	21.776	-0.085	•	4/18/98 3:29	21.804	-0.08
4/18/98 5:33	21.759	0		4/18/98 3:33	21.802	0.015
4/18/98 5:37	21.759	0		4/18/98 3:37	21.816	-0.09
4/18/98 5:41	21.759	0		4/18/98 3:41	21.788	0.05
4/18/98 5:45	21.759	0		4/18/98 3:45	21.805	-0.13
4/18/98 5:49	21.759	-0.005		4/18/98 3:49	21.798	-0.015
4/18/98 5:53	21.759	0.025		4/18/98 3:53	21.798	-0.165
4/18/98 5:57	21.759	-0.06		4/18/98 3:57	21.779	-0.11
4/18/98 6:01	21.758	-0.02		4/18/98 4:01	21.795	-0.25
4/18/98 6:05	21.764	-0.03		4/18/98 4:05	21.765	-0.015
4/18/98 6:09	21.747	-0.025		4/18/98 4:09	21.757	0.085
4/18/98 6:13	21.754	0.04		4/18/98 4:13	21.745	-0.08
4/18/98 6:17	21.758	0.03		4/18/98 4:17	21.762	0.005
4/18/98 6:21	21.742	0.175		4/18/98 4:21	21.774	-0.18
4/18/98 6:25	21.762	-0.02		4/18/98 4:25	21.729	0.025
4/18/98 6:29	21.764	-0.125		4/18/98 4:29	21.763	-0.08
4/18/98 6:33	21.777	-0.07		4/18/98 4:33	21.738	-0.08
4/ 10/90 0.33	21.777	-0.01				

4/18/98 6:37	21.758	0.02		4/18/98 4:37	21.734	-0.1
4/18/98 6:41	21.739	0.115		4/18/98 4:41	21.747	-0.1
4/18/98 6:45	21.763	0.01		4/18/98 4:45	21.722	0.005
4/18/98 6:49	21.762	0.145		4/18/98 4:49	21.714	-0.095
4/18/98 6:53	21.762	-0.035		4/18/98 4:53	21.727	-0.075
4/18/98 6:57	21.765	0.07		4/18/98 4:57	21.723	-0.075
4/18/98 7:01	21.791	-0.15		4/18/98 5:01	21.695	-0.06
4/18/98 7:05	21.755	0.045		4/18/98 5:05	21.712	-0.165
4/18/98 7:09	21.779	0.045		4/18/98 5:09	21.708	-0.04
4/18/98 7:13	21.761	0.155		4/18/98 5:13	21.683	-0.035
4/18/98 7:17	21.764	0.07		4/18/98 5:17	21.679	-0.035
4/18/98 7:21	21.788	-0.01		4/18/98 5:21	21.7	-0.12
4/18/98 7:25	21.792	-0.015		4/18/98 5:25	21.676	0
4/18/98 7:29	21.778	0.225		4/18/98 5:29	21.672	0.02
4/18/98 7:33	21.786	6.125		4/18/98 5:33	21.676	0
4/18/98 7:37	21.789	13.48		4/18/98 5:37	21.676	0
4/18/98 7:41	21.823	12.67	,	4/18/98 5:41	21.676	0
4/18/98 7:45	23.011	-4.5		4/18/98 5:45	21.676	0
4/18/98 7:49	24.485	-14.35		4/18/98 5:49	21.676	-0.01
4/18/98 7:53	24.357	-14.51		4/18/98 5:53	21.676	0.13
4/18/98 7:57	22.111	-4.18		4/18/98 5:57	21.676	0.04
4/18/98 8:01	21.615	-2.18		4/18/98 6:01	21.674	-0.015
4/18/98 8:05	21.455	-1.6		4/18/98 6:05	21.702	-0.035
4/18/98 8:09	21.275	-0.785		4/18/98 6:09	21.684	0.085
4/18/98 8:13	21.179	-0.215		4/18/98 6:13	21.671	0.035
4/18/98 8:17	← 21.135	0.11		4/18/98 6:17	21.695	-0.07
4/18/98 8:21	21.118	0.155		4/18/98 6:21	21.701	-0.04
4/18/98 8:25	21.136	0.045		4/18/98 6:25	21.678	0.085
4/18/98 8:29	21.157	-0.085		4/18/98 6:29	21.681	0.185
4/18/98 8:33	21.149	-0.09		4/18/98 6:33	21.693	0.035
4/18/98 8:37	21.145	0.01		4/18/98 6:37	21.695	0.125
4/18/98 8:41	21.14	-0.07		4/18/98 6:41	21.718	-0.095
4/18/98 8:45	21.131	-0.02		4/18/98 6:45	21.7	0.01.
4/18/98 8:49	21.147	0.205		4/18/98 6:49	21.72	-0.065
4/18/98 8:53	21.126	0.525		4/18/98 6:53	21.699	0.07
4/18/98 8:57	21.127	0.49		4/18/98 6:57	21.702	0.07
4/18/98 9:01	21.188	0.245		4/18/98 7:01	21.707	0.165
4/18/98 9:05	21.231	0.085		4/18/98 7:05	21.713	0.15
4/18/98 9:09	21.225	0.18		4/18/98 7:09	21.716	-0.055
4/18/98 9:13	21.237	0.045		4/18/98 7:13	21.74	0.05
4/18/98 9:17	21.248	0.005		4/18/98 7:17	21.743	-0.03
4/18/98 9:21	21.261	0.105		4/18/98 7:21	21.705	0.195
4/18/98 9:25	21.246	0.21		4/18/98 7:25	21.75	-0.01
4/18/98 9:29	21.249	0.115		4/18/98 7:29	21.737	0.225
4/18/98 9:33	21.282	0.14		4/18/98 7:33	21.744	6.85
4/18/98 9:37	21.288	-0.15		4/18/98 7:37	21.748	9.75
4/18/98 9:41	21.272	-0.02		4/18/98 7:41	21.782	-1.875
4/18/98 9:45	21.31	-8.15		4/18/98 7:45	23.114	-11.89
4/18/98 9:49	21.258	-15.735		4/18/98 7:49	23.698	-14.795

4/18/98 9:53	21.268	-24.64		4/18/98 7:53	21.407	-4.135
4/18/98 9:57	19.68	-25.91		4/18/98 7:57	20.736	-0.955
4/18/98 10:01	18.111	-27.515		4/18/98 8:01	20.739	-1.14
4/18/98 10:05	16.34	-28.18		4/18/98 8:05	20.58	-0.455
4/18/98 10:09	14.498	-28.4215		4/18/98 8:09	20.545	-0.26
4/18/98 10:13	12.608	-28.6775		4/18/98 8:13	20.511	0.1
4/18/98 10:17	10.704	-24.0505		4/18/98 8:17	20.489	0.105
4/18/98 10:21	8.8137	-22.3315		4/18/98 8:21	20.493	0.15
4/18/98 10:25	6.8725	-19.4895		4/18/98 8:25	20.531	-0.06
4/18/98 10:29	5.8939	-17.7315		4/18/98 8:29	20.51	0.125
4/18/98 10:33	4.3474	-11.1795		4/18/98 8:33	20.523	0.015
4/18/98 10:37	2.9746	-4.823		4/18/98 8:37	20.519	0.115
4/18/98 10:41	2.3476	-1.8685		4/18/98 8:41	20.535	0.035
4/18/98 10:45	2.1115	-1.955		4/18/98 8:45	20.526	0.085
4/18/98 10:49	2.01	-2.327		4/18/98 8:49	20.542	-0.005
4/18/98 10:53	1.9739	-2.427		4/18/98 8:53	20.542	0.005
4/18/98 10:57	1.7205	-1.462		4/18/98 8:57	20.543	-0.03
4/18/98 11:01	1.5446	-0.539		4/18/98 9:01	20.541	-0.07
4/18/98 11:05	1.4885	-0.2565		4/18/98 9:05	20.543	0.815
4/18/98 11:09	1.4281	-0.0815		4/18/98 9:09	20.537	2.16
4/18/98 11:13	1.4368	-0.124		4/18/98 9:13	20.527	2.345
4/18/98 11:17	1.4372	-0.2135		4/18/98 9:17	20.706	1.57
4/18/98 11:21	1.4118	-0.1345		4/18/98 9:21	20.969	0.42
4/18/98 11:25	1.412	-0.094		4/18/98 9:25	20.996	0.21
4/18/98 11:29	1.3945	-0.1635	•	4/18/98 9:29	21.02	0.01
4/18/98 11:33	1.3849	0.014		 4/18/98 9:33	21.053	0.035
4/18/98 11:37	1.3932	-0.2045		4/18/98 9:37	21.038	0.055
4/18/98 11:41	1.3618	0.3265		4/18/98 9:41	21.022	0.085
4/18/98 11:45	1.3877	5.3395		4/18/98 9:45	21.06	-1.995
4/18/98 11:49	1.3523	13.03		4/18/98 9:49	21.049	-9.24
4/18/98 11:53	1.4271	21.136		4/18/98 9:53	21.039	-17.61
4/18/98 11:57	2.4556	24.959		4/18/98 9:57	20.661	-24.795
4/18/98 12:01	3.9583	26.697		4/18/98 10:01	19.201	-26.92
4/18/98 12:05	5.6543	27.5585		4/18/98 10:05	17.517	-28.21
4/18/98 12:09	7.4474	23.138		4/18/98 10:09	15.702	-28.883
4/18/98 12:13	9.2977	14.5815		4/18/98 10:13	13.817	-29.1395
4/18/98 12:17	11.166	6.04		4/18/98 10:17	11.875	-28.9365
4/18/98 12:21	12.075	2.155		4/18/98 10:21	9.9254	-25.837
4/18/98 12:25	12.214	2.32		4/18/98 10:25	7.9891	-21.93
4/18/98 12:29	12.374	2.355		4/18/98 10:29	6.0877	-21.091
4/18/98 12:33	12.506	2.815		4/18/98 10:33	4.758	-16.386
4/18/98 12:37	12.678	2.965		4/18/98 10:37	3.6031	-11.446
4/18/98 12:41	12.845	3.44		4/18/98 10:41	1.8695	-3.1765
4/18/98 12:45	13.069	3.205		4/18/98 10:45	1.4808	-1.522
4/18/98 12:49	13.271	3.485		4/18/98 10:49	1.3139	-1.0235
4/18/98 12:53	13.533	3.27		4/18/98 10:53	1.2342	-0.6875
4/18/98 12:57	13.71	3.59		4/18/98 10:57	1.1764	-0.483
4/18/98 13:01	13.968	3.375		4/18/98 11:01	1.1092	-0.213
4/18/98 13:05	14.187	3.695		4/18/98 11:05	1.0967	0.0695

4/18/98 13:09	14.428	3.37		4/18/98 11:09	1.0798	0.3535
4/18/98 13:13	14.643	3.495		4/18/98 11:13	1.0666	0.6385
4/18/98 13:17	14.926	3.28		4/18/98 11:17	1.1106	0.222
4/18/98 13:21	15.102	3.705		4/18/98 11:21	1.1505	0.0835
4/18/98 13:25	15.342	3.6		4/18/98 11:25	1.1943	-0.094
4/18/98 13:29	15.582	3.595		4/18/98 11:29	1.155	0.163
4/18/98 13:33	15.843	3.28		4/18/98 11:33	1.1672	0.2315
4/18/98 13:37	16.062	3.295		4/18/98 11:37	1.1755	0.122
4/18/98 13:41	16.301	8.565		4/18/98 11:41	1.1876	1.0885
4/18/98 13:45	16.499	19.545		4/18/98 11:45	1.2135	7.8385
4/18/98 13:49	16.721	28.39		4/18/98 11:49	1.1999	16.063
4/18/98 13:53	18.014	33.475		4/18/98 11:53	1.4053	23.938
4/18/98 13:57	20.408	32.715		4/18/98 11:57	2.7812	26.1205
4/18/98 14:01	22.399	33.065		4/18/98 12:01	4.4125	27.5245
4/18/98 14:05	24.709	31.375		4/18/98 12:05	6.1929	28.0555
4/18/98 14:09	26.951	29.7		4/18/98 12:09	8.0053	23.4285
4/18/98 14:13	29.012	28.87		4/18/98 12:13	9.9174	14.988
4/18/98 14:17	30.984	28.555		4/18/98 12:17	11.804	6.78
4/18/98 14:21	32.891	28.45		4/18/98 12:21	12.691	3.53
4/18/98 14:25	34.786	28.45		4/18/98 12:25	12.915	3.8
4/18/98 14:29	36.695	27.625		4/18/98 12:29	13.16	3.935
4/18/98 14:33	38.581	26.515		4/18/98 12:33	13.397	4.075
4/18/98 14:37	40.476	21.755		4/18/98 12:37	13.675	4.225
4/18/98 14:41	42.22	15.64		4/18/98 12:41	13.947	4.17
4/18/98 14:45	43.884	8.595		4/18/98 12:45	14.212	4.365
4/18/98 14:49	44.827	4.625	·	4/18/98 12:49	14,52	4.005
4/18/98 14:53	45.348	2.47		4/18/98 12:53	14.781	4.11
4/18/98 14:57	45.603	1.47		4/18/98 12:57	15.085	3.89
4/18/98 15:01	45.752	0.775		4/18/98 13:01	15.321	3.995
4/18/98 15:05	45.842	-2.39		4/18/98 13:05	15.603	3.785
4/18/98 15:09	45.897	-11.865		4/18/98 13:09	15.863	3.68
4/18/98 15:13	45.907	-23.345		4/18/98 13:13	16.12	3.695
4/18/98 15:17	45.364	-29.8		4/18/98 13:17	16.36	3.585
4/18/98 15:21	43.524	-29.905		4/18/98 13:21	16.599	3.585
4/18/98 15:25	41.238	-28.015		4/18/98 13:25	16.859	3.27
4/18/98 15:29	39.404	-28.43		4/18/98 13:29	17.077	-3.27
4/18/98 15:33	37.543	-28.63		4/18/98 13:33	17.316	3.06
4/18/98 15:37	35.635	-28.65		4/18/98 13:37	17.513	3.075
4/18/98 15:41	33.718	-23		4/18/98 13:41	17.731	6.55
4/18/98 15:45	31.817	-21.67		4/18/98 13:45	17.928	17.09
4/18/98 15:49	29.905	-16.085		4/18/98 13:49	18.128	24.68
4/18/98 15:53	29.118	-17.52		4/18/98 13:53	19.041	29.99
4/18/98 15:57	27.483	-9.745		4/18/98 13:57	21.346	28.95
4/18/98 16:01	26.688	-6.02		4/18/98 14:01	23.064	30.15
4/18/98 16:05	25.614	-0.915		4/18/98 14:05	25.039	29.825
4/18/98 16:09	25.534	-0.905		4/18/98 14:09	27.136	28.875
4/18/98 16:13	25.484	-0.83		4/18/98 14:13	29.094	28.565
4/18/98 16:17	25.431	-0.865		4/18/98 14:17	31.004	28.355
4/18/98 16:21	25.353	-0.59		4/18/98 14:21	32.911	28.35

4/18/98 16:25	25.318	-0.605		4/18/98 14:25	34.807	28.345
4/18/98 16:29	25.258	-0.44		4/18/98 14:29	36.675	27.425
4/18/98 16:33	25.235	-0.325		4/18/98 14:33	38.581	25.52
4/18/98 16:37	25.197	-0.2		4/18/98 14:37	40.476	19.47
4/18/98 16:38	25.17	-0.1	٠	4/18/98 14:41	42.16	12.86
				4/18/98 14:45	43.685	5.915
				4/18/98 14:49	44.37	2.74
				4/18/98 14:53	44.732	1.08
•				4/18/98 14:57	44.868	0.58
				4/18/98 15:01	44.918	0.175
				4/18/98 15:05	44.948	-0.005
				4/18/98 15:09	44.984	0.065
				4/18/98 15:13	44.953	0.075
				4/18/98 15:17	44.947	0.255
				4/18/98 15:21	44.997	0.06
				4/18/98 15:25	44.968	0.16
				4/18/98 15:29	44.998	-0.045
				4/18/98 15:33	45.009	0.065
				4/18/98 15:37	45	0.05
				4/18/98 15:41	44.989	-1.13
				4/18/98 15:45	45.022	-10.815
				4/18/98 15:49	45.01	-20.515
				4/18/98 15:53	44.763	-28.715
				4/18/98 15:57	42.859	-28.65
				4/18/98 16:01	40.907	-28.54
	` ∢		e s esse	 4/18/98 16:05	39.02	-28.6
				4/18/98 16:09	37.129	-26.04
				4/18/98 16:13	35.199	-19.42
				4/18/98 16:17	33.3	-14.615
				4/18/98 16:21	31.921	-19.315
				4/18/98 16:25	31.315	-28.935
				4/18/98 16:29	30.377	-25.205

4/18/98 16:33

4/18/98 16:37

4/18/98 16:38

28.058

25.528

25.336

**-13.61**.

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### Section 3B: Frequency and Power Hystersis - F04

This section contains data regarding frequency and power hysteresis. In three temperature cycles, the maximum change in frequency was 3 kHz and the maximum change in power of 0.35 dB, both neglectfully small.

rest Setup Vermed:_	Signature	•				
Temperature Cycle	Cycle 1	Cycle 2	Cycle 3	Cycle 4	Cycle 5	Cycle 6
Frequency 57.290344 GHz ±200 kHz			ال با	57,290336	57.29033g	57,29033
Output Power 17 to 20 dBm	* 21.06d/m	19.72	9.75 dbm	19.75dBm	19,92	20,05 db
Frequency 57.290344 GHz ±200 kHz	57. 290 336	57.290336	57. 290339		ÇWN	000)
Output Power 17 to 20 dBm	19.55dBm	19.34dkm	19.69 dbm		•	

Shop Order No.: 43/6/8	Test Engineer: M. Hard
Unit Serial No.:	Quality Assurance: (56) 411/94
Date: 4/13/98	DCMC: Tolacgac

CYCLE#			
Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
22 ±2 Note 1	23,9°c	+15,01/528ma	-15.04/57.71ma
32 ±3	31.200	15.01/502ma	-15.06/58.37ma
42 ±3	40,6°C	15,01 /538 mA	-15.04/59,30mA
52 ±3	51.906	15,01/544 mg	-15,04/60.11mA
60 ±2 Note 2	59,200	15.01/549 mA	-15,04/60.7 mA
52 ±3	49.9°C	15.01/540m A	-15.02/60.8mA
42 ±3	53,0°C 39.	00 15.02/530mA	-15.03/59.2mA
32 ±3	turg 0.400 29	E 15.02/530MA	-15.03/58.7 mA
22 ±2 Notes 1, 3	21.9°C	15.02/529mA	-15.03/57.7mA
12 ±3 (Unit Off)	11.700	15,00/ SHAS22 MA	-15.0 Z ATA 56.55MA
2 ±3 (Unit Off)	2,100	15.01 NAS 6 MB	
-12 ±3 (Unit Off)	-11,3°C	15,01 NA 506 MA	- 14,99 NA 53,68 M
-22 ±3 (Unit Off)	-22.9°C	15:01 NA 494MA	-14,97 NA 53,28 mg
-30 ±2 (Unit Off) Note 2	-29.5°C	15.01 N/A 489MA	-14,97 N/A-52,137 mg
-30 ±2 Note 4	-30.0°C	15.01 489mA	-14.99 -52.28 m
-20 ±3	-19.2°C	15.02 502 mA	-15.07 -52.9 mg
-10 ±3	-9.7 °C	15.02 508 mA	-15.06 -54.17mm
0 ±3	0.1 %	15.02 515.3 mA	-15.02 -55.33-mg
10 ±3	9.5°C	15.02 521.4mA	-15.06 -56.43 mg
22 ±2 Note 1	20.8°C	15.02 528 mA	-15.05 -57.58m4
OTES: Stabilize for minimum of 5 n cycle number (reference Figu	ninutes. Record frequenc are 12). After recording d	y output power and current as lata, cycle dc power and verif	required for corresponding y unit reacquires lock.
Minimum 4 hour dwell at ten	nperature.	•. •	
Turn OFF unit power for tran	sition to cold.		-1 pt land
After soak, turn ON unit pow	er, record temperature an	d currents.	Earp# 100/56
op Order No.: <u>43/6/8</u>		Test Engineer:	
nit Serial No.: <u>Fo Y</u>		Quality Assurance:	1/0/98
ate: 4/13/58		DCMC:	94/20198

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Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
22 ±2 Note 1	22.4%	15.02 529 mA	-15.05 -57.74m
32 ±3	32.8°C	15.02 534mA	-15.05 -58.64 m
42 ±3	42.2 °C	15.02 539mA	-15.05 -59.44 mg
52 ±3	51.7 °C	15.01 544.6 mA	-15.06 -60.23 ml
60 ±2 Note 2	59.0℃	15.00 548.7 mA	-15.04 -60.76 ma
52 ±3	52.7%	15,02 541MA	-15.02 60.4mA
42 ±3	41.42	1502 535 ma	-15.03 60,04 ma
32 ±3	31.8°C	15.02 530ma	-15,03 58,93mg
22 ±2 Notes 1, 3	23.40	15.02 529ma	-15,03 57.90 ma
12 ±3 (Unit Off)	12.400	N/A	N/A
2 ±3 (Unit Off)	2,9°C	N/A	N/A
-12 ±3 (Unit Off)	-12,3°C	· N/A	N/A
-22 ±3 (Unit Off)	-22,0°C	N/A	N/A
-30 ±2 (Unit Off) Note 2	-30,0°C	N/A	N/A
-30 ±2 Note 4	-31.0°C	15,01/487mA	-15.01-52,31 ma
-20 ±3	-20,6°C	15,02/498mA	-15,03/-53.33m
-10 ±3	-11,000	15.02/506 MA	-1506/-54.92m
0 ±3	-1.6°C	15.02/513MA	-15.06/55.3mA
10 ±3	9,9°C	15.02/521ma	-15.05/-56.55 m
22 ±2 Note 1	20,88	115,01/528 ma	15,06/-57,65

#### NOTES:

- 1. Stabilize for minimum of 5 minutes. Record frequency output power and current as required for corresponding cycle number (reference Figure 12). After recording data, cycle dc power and verify unit reacquires lock.
- 2. Minimum 4 hour dwell at temperature.
- 3. Turn OFF unit power for transition to cold.
- 4. After soak, turn ON unit power, record temperature and currents.

Shop Order No.: 431618	Test Engineer: 1. Hail
Unit Serial No.: Fo4	Quality Assurance: Quality Assurance: 12/15 4/12/98
Date: 04/14/98	DCMC: /7. Valacgas

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Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
22 ±2 Note 1	21,3°C	15,02/528 ma	-15.07/-57.68m
32 ±3	30.9°C	15,01/533ma	-15,06/-58.59v
42 ±3	40,4°c	1501/538 ma	-15.04/-59.49 m
52 ±3	51.800	15:01/545 ma	15,05/-60,30m
60 ±2 Note 2	60.70	15,00/550 ma.	-15,05/60,98n
52 ±3	53.0 C	15.01 / 596 ma	-15.02/- 60.39m
42 ±3	42.9°C	15.02/540 MG	
32 ±3	32.7°C	15.02/535ma	-15.02 1-58.76
22 ±2 Notes 1, 3	22.6°C	15.02/529ma	-15.02 /-57.97m
12 ±3 (Unit Off)	11.5°C	N/A	N/A
2 ±3 (Unit Off)	1.3°C	N/A	N/A
-12 ±3 (Unit Off)	-11.9°C	N/A	N/A
-22 ±3 (Unit Off)	-21.30C	N/A	N/A
-30 ±2 (Unit Off) Note 2	-29,8°C	N/A	N/A
-30 ±2 Note 4	-29,9°C	15,02 /489 mA	-15.03/-52,5ml
-20 ±3	-21.1°C	15.02/498mA	-15,06/-53.2mg
-10 ±3	-11.6°C	15,02/507MA	-15.06/-54.1m
0 ±3	-0.2°C	15,02/514mA	-15,06/-55,4m.
10 ±3	9.4 °C	15.02/52/mA	-15.04/-56.6mA
22 ±2 Note 1	22.400	15,02/528 MA	-15,05/-57,8m1

#### NOTES:

- 1. Stabilize for minimum of 5 minutes. Record frequency output power and current as required for corresponding cycle number (reference Figure 12). After recording data, cycle dc power and verify unit reacquires lock.
- 2. Minimum 4 hour dwell at temperature.
- 3. Turn OFF unit power for transition to cold.
- 4. After soak, turn ON unit power, record temperature and currents.

Shop Order No.: 431618	Test Engineer: M Spolma
	Quality Assurance: (6)
Date: 04/15/98	DCMC: F. Jalagae

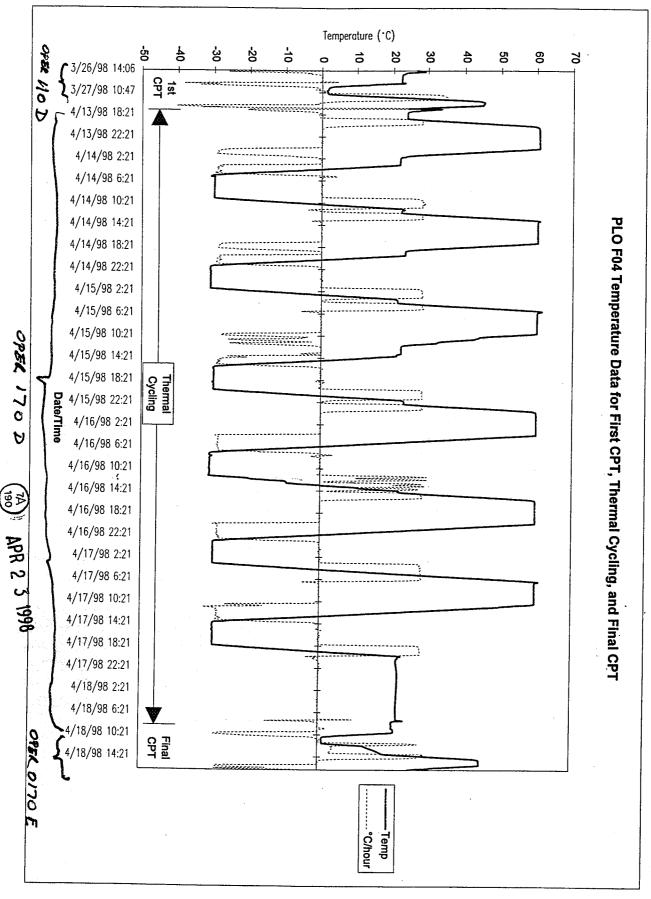
	C	YCLE# 4			
	•	Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
		22 ±2 Note 1	23.2 °C	15,02/528 mA	-15.05/57,9MA
		32 ±3	32,9°C	15,02 534mA	-15,03/58.8mA
		42 ±3	42,4%	15.02 1539mA	-15.02/59.6MA
		52 ±3	51,9°C	15,01/546MA	-15.02 /60,4 MA
		60 ±2 Note 2	59,4°C	15,00/549 mas	-15.01/60,9/md
(55g)		52 ±3	N/A	NA	NA
(20)		42 ±3	<u> </u>	1	
漆	)	32 ±3			
28%		22 ±2 Notes 1, 3			
4.20.88	1	12 ±3 (Unit Off)		N/A	N/A
	7	2 ±3 (Unit Off)		N/A	N/A
		-12 ±3 (Unit Off)		N/A	N/A
	1	-22 ±3 (Unit Off)		N/A	N/A
		-30 ±2 (Unit Off) Note 2	N/A	N/A	N/A
	•	-30 ±2 Note 4	-30.9°C	15.02 /487 mA	-15.03 /-52.27mA
		-20 ±3	-19.9°C	15.02 / 499 mA	-15.10 /-5336nA
		-10 ±3	-9.90°C	15.02/508 mA	-15.08 /-54.33mA
		0 ±3	-0.40°C	15.02 / 514 mA	-15.08 /-55.46 mA
		10 ±3	9.50°C	15.02/520 MA	-15.09/-5651ma
		22 ±2 Note 1	21.6°C	15,02/527mA	-15.09/57,79mf
	NO7	TES: Stabilize for minimum of 5 m cycle number (reference Figu	output power and current as a, cycle dc power and verif	required for corresponding y unit reacquires lock.	
	2.	Minimum 4 hour dwell at terr	perature.	•	
	3.	Turn OFF unit power for tran	sition to cold.		
	4.	After soak, turn ON unit pow	er, record temperature and	currents.	1/00/5 to 6
	Shop	o Order No.: 43/6/8	Ç Te	est Engineer: 7A	1/2998
1934 <u>.</u>	Date	i liclos		смс: <u> </u>	26/95

. ;		Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
		22 ±2 Note 1	23.2°C	15.02/528mA	-15.05/57.9 mA
		32 ±3	33.0°C	15.02 / 533 mA	-15.08/58.81 mA
		42 ±3	42.4° C	15.02/539 mA	-15.07/-59.7mA
		52 ±3	52.0	15.01 /544 mA	-15.07/-60.38mA
		60 ±2 Note 2	59.7°C	15.01 / 540 ma	-15.04/61.32ma
		52 ±3	NA	NA	NIA
	<b>-</b>	42 ±3			<b>\</b>
	1	32 ±3			
e50)		22 ±2 Notes 1, 3			
	1	12 ±3 (Unit Off)		N/A	N/A
ξ.	5	2 ±3 (Unit Off)		N/A	N/A
20.98	1	-12 ±3 (Unit Off)		N/A	N/A
step 3		-22 ±3 (Unit Off)	N/A_	N/A	N/A
4.2	3)34	-30 ±2 (Unit Off) Note 2	-29.0°C	N/A	N/A
اد وي	7,	-30 ±2 Note 4	- 28.1°C	15.02/491 mA	-15.07/52.9mA
		-20 ±3	-21.5°C	15.02/497m A	-15.09/-53, 17mA
		-10±3 4/17/8t	- 12.1°C	15.02/506mA	-15.09/54.7mA
		0±3 (O) M. Lodman	-4-5° C.0.7°	15,02/512m A	-15.09/-55.40ma
İ		10 ±3	10,7°C	1501/520 mA	-1508/-56.65 ma
		22 ±2 Note 1-M Spoky	20,2°C	15,01/526ma	-15.09/-57.68m
		4/1/198 (50)	•	T T	7
	NO7	Stabilize for minimum of 5 m cycle number (reference Figur	inutes. Record frequency of the 12). After recording dat	output power and current as a, cycle dc power and verif	s required for corresponding y unit reacquires lock.
	2.·	Minimum 4 hour dwell at tem	perature.		
	3.	Turn OFF unit power for trans	sition to cold.	Ç	DID MANCE
	4.	After soak, turn ON unit power	er, record temperature and	currents.	QCL 100155
	Shop	p Order No.: 43/6/8	) Te	est Engineer: M.R.	farbroid
	Unit	: Serial No.:	Qt	uality Assurance: 4/20/2	78 (190)
		. 4/1/0/98	-	CMC: 9 4/2	6/18

		320000000000000000000000000000000000000	( <u>-</u>	
CZ	CLE# \$ SHT John M. Kyarb	1 (85°)   (46)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)   (16)		
	Baseplate Temperature °C	Actual Baseplate Temperature TC1	+15V Current	-15V Current
	22 ±2 Note-1 CONTF	Rom SATIOF	<b>D</b> .,	
	32 ±3	31.600	15,01/532 ma	-15,08/-587/ma-
	42 ±3	41,2°C	15.01/538ma	-15.09/-59.60ma
	52 ±3	50.7°C	15.01/544 ma	15,09/-60,36 mac
	60 ±2 Note 2	61:0°C	15:01/540 ma	-15,04/-61.45ma
	52 ±3	NA	NA	N/A
	42 ±3	N/A	N/A	N/A
•	32 ±3	NA	N/A	N/A
	22 ±2 Notes 1, 3	N/A	NA	NA
	12 ±3 (Unit Off)	N/A	N/A	N/A
	2 ±3 (Unit Off)	N/A	N/A	N/A
	-12 ±3 (Unit Off)	NA	N/A	N/A
	-22 ±3 (Unit Off)	NA	N/A	N/A
	-30 ±2 (Unit Off) Note 2	-29.6°C	N/A	N/A
	-30 ±2 Note 4	-29,7°C	15.01 /488mA	-14.97 1-52.4MA
	-20 ±3	-20,4°C	15,01/498mA	-15,04 /-53,3mH
	-10 ±3	-10,9°C	15,02/506MA	-15.08 /-54.6 mA
	0 ±3	0,400	15.02/515MA	-15,08/-55,6MA
	10 ±3	9.900	15,02/520 MA	-15.08/-56,5mA
	22 ±2 Note 1	22,6°C	15,02/528mA	-15.08/-57,9mA
1.	TES: Stabilize for minimum of 5 m cycle number (reference Figu	re 12). After recording date	output power and current as a, cycle dc power and verif	required for corresponding y unit reacquires lock.
2.	Minimum 4 hour dwell at ten	,	5	OCP/00176
3.	Turn OFF unit power for tran		2	4001700 x
4.	After soak, turn ON unit pow	er, record temperature and	currents.	\$10C
Sho _l	o Order No.: 43 1618	TO Q	est Engineer: MADO	1ma (7A)
Date	4/17/98	D	CMC: 4/2	5/94

TEST DATA SHEET 7 (Sheet 3 of 3) Temperature Cycling (Paragraph 4.2.2)

			5	TC#1	7	
	Step No.	Time	Date	23.8°C	1 1	٠.
	1.	6:30 Pm	4/13/98	23.7 0	1	
	2.	7:00 pm		59.2°C	1 : 1	
	3.	12:20 am	4/14/98	60.9°C	†·	
	- <u>4.</u> 5.	2140 Am	4/14/98	21,900	1	•
1.	<u> </u>	3:25 Am	22/14/98	21,0°C	1.	
·} }	7.	5/20 Am	4/14/98	-30.10R	1	
.].	* 8.	9:25 AM	04/14/98	- 30.0°C	7	
00	9.	11:20 AM	04/14/98	2086		
(2°C)		13:25 11:50	04/14/98	59.0°C 22.4°C Til	4/14/	78
417197	11.	17:25 1:30	4/14/98	60.206590°C To	trial 4/41	1/48
4utr.J	12.	17:30	41.4/98	60, & ° C		
1 (	13. 7://		11/14/98	23,3 -		
-	14.	7:40 PM	4/14/98	23,300	_	
.]	15.	9:40PM	4/14/98	-30,0°C	1	.*
	16.	1:45 Am	4/15/98	-31.0° C		
	17.	4:10 Am	4/15/98	21,3°€	1 1	
-	18.	4.15Am	4/15/98	21,300	4	
1 · i	19.	5345 AM	4/15/98	61.500	4 1	
	20.	9:45 AM	4 115198	60.100	4	and the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of t
	21.	12:50 PM	41,5198	22.3°C	4	
	22.	1:20 PM	4.15,98	7z. 3°C	- 1	2.4.74
	23.	4100 PM	4/15/98	-29,8°C	-	
	24.	8:00 PM	4/15/98	-29,9°C	-	10
	25.	9:55 PM	4/13/98	+ 22, 4°C	-	$(\mathcal{C}_{\mathcal{S}_{\mathcal{S}}^{\mathcal{S}_{\mathcal{S}}}})$
	26.	10:25 PM	4/15/98	23,2°C 59.9°C	TIM CA	Smi
	27.	00:00	416/98	60,0°C	m.Sp	7 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -
	28.	04:00	4/16/98	-70.3°C	7 1	
	29.	97 <b>20</b> 0720	4/16/98	-30.9°C	۱ (۲	
	30.	11:20 am	4/16/98	59.8°C	1	
	31.	4:05 Pm	4/16/98	59,9°C	7 1	
	32.	8:10 PM	4/26/98	-29,500	7	
	33.	11:25 PM 3:25 Am	4117198	- 29,8°C	7 1	
	34.	06135 Am	4/17/98	58,3°C	7	
	35. 36.	10:38 Am	417/98	599°C		•
	37.	2:05pm	4/17/98	-29.6°C		
	38.	6!16 PM	4/17/98	-29,7°C	]	
	39.	8108 PM	4/17/98	22,6°C		
	40.	8120 PM	4/17/98	22,1001		
Shop O	rder No.: 43/6/		Test Enginee	×11-1		• .
1	rial No.:	<del></del>	Quality Assu	(30) 11,0/100		
Unit Sei	1141 110		_			•
Date: _	4/13/98		DCMC:	To Galacgae		
				<del>-</del>		



Dela Manuel A

FO3

DAT35

FO4 Base plate

	Baseplate			1	Base plate	
Date/Time	Temp	°C/hour		Date/Time	Temp	°C/hour
3/27/98 14:45	22.115	0.425		3/26/98 14:06	26.644	12.135
3/27/98 14:49	22.087	-4.76		3/26/98 14:10	27.729	2.08
3/27/98 14:53	22.08	-12.48		3/26/98 14:14	28.747	-16.795
3/28/98 9:48	. 22.2	-23.29		3/26/98 14:18	29.071	-26.07
3/28/98 9:52	21.135	-29.01		3/26/98 14:22	28.145	-23.715
3/28/98 9:56	19.584	-32.575		3/26/98 14:26	25.388	-10.31
3/28/98 10:00	17.542	-33.68		3/26/98 14:30	23.857	-3.975
3/28/98 10:04	15.333	-34.336		3/26/98 14:34	23.402	-2.905
3/28/98 10:08	13.069	-34.7885		3/26/98 14:35	23.326	-4.1
3/28/98 10:12	10.806	-27.0155	•	3/26/98 14:39	23.062	-3.2
3/28/98 10:16	8.4658	-27.7495		3/26/98 14:43	22.821	-2.14
3/28/98 10:20	6.1113	-19.7105		3/26/98 14:47	22.506	-0.735
3/28/98 10:24	5.4029	-18.058		3/26/98 14:51	22.422	-0.555
3/28/98 10:28	2.9159	-6.677		3/26/98 14:55	22.393	-0.39
3/28/98 10:32	2.1692	-3.5305		3/26/98 14:59	22.359	-0.345
3/28/98 10:36	1.7913	-1.9195		3/26/98 15:03	22.311	-0.08
3/28/98 10:40	1.5805	-1.085		3/26/98 15:07	22.315	-0.08
3/28/98 10:44	1.4631	0.273		3/26/98 15:11	22.29	0.025
3/28/98 10:48	1.4074	0.4905		3/26/98 15:15	22.295	-0.11
3/28/98 10:52	1.3635	0.7565		3/26/98 15:19	22.299	-0.12
3/28/98 10:56	1.5177	-0.0075		3/26/98 15:23	22.295	-0.245
3/28/98 11:00	1.5055	-0.0245		3/26/98 15:27	22.273	-0.09
3/28/98 11:04	1.5148	-0.195	The state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the state of the s	3/26/98 15:31	22.275	-0.08
3/28/98 11:08	1.5162	0.0975		3/26/98 15:35	22.246	0.085
3/28/98 11:12	1.5006	0.132		3/26/98 15:39	22.255	0.075
3/28/98 11:16	1.4758	5.391		3/26/98 15:43	22.259	-0.1
3/28/98 11:20	1.5357	14.479		3/26/98 15:47	22.263	0.09
3/28/98 11:24	1.527	24.905		3/26/98 15:51	22.27	-0.055
3/28/98 11:28	2.554	30.7915		3/26/98 15:55	22.239	0.07
3/28/98 11:32	4.4315	32.8275		3/26/98 15:59	22.281	-0.33
3/28/98 11:36	6.508	33.77		3/26/98 16:03	22.259	-0.435
3/28/98 11:40	8.7123	34.3285		3/26/98 16:07	22.253	4.55
3/28/98 11:44	10.997	34.515		3/26/98 16:11	22.215	3.32
3/28/98 11:48	13.262	34.695		3/27/98 8:59	22.172	-15.19
3/28/98 11:52	15.578	33.77		3/27/98 9:03	23.163	<del>-</del> 31.54
3/28/98 11:56	17.9	31.855		3/27/98 9:07	22.879	-38.3
3/28/98 12:00	20.201	29.205	*	3/27/98 9:11	19.134	-29.33
3/28/98 12:04	22.332	26.74	# [*] *	3/27/98 9:15	16.855	-28.705
3/28/98 12:08	24.271	24.515		3/27/98 9:19	15.219	-31.804
3/28/98 12:12	26.042	22.465		3/27/98 9:23	13.268	-33.8435
3/28/98 12:16	27.68	20.265		3/27/98 9:27	11.114	-29.748
3/28/98 12:20	29.174	18.49		3/27/98 9:31	8.8582	-27.362
3/28/98 12:24	30.535	16.98		3/27/98 9:35	6.4993	-19.56
3/28/98 12:28	31.733	15.615		3/27/98 9:39	5.1644	-14.504
3/28/98 12:32	32.872	14.375		3/27/98 9:43	3.3858	-6.6
3/28/98 12:36	33.931	16.58		3/27/98 9:47	2.5873	-3.1965
3/28/98 12:40	34.856	28.97		3/27/98 9:51	2.2636	-1.8455
3/28/98 12:44	35.747	35.325		3/27/98 9:55	2.0658	-1.2755

3/28/98 12:48	37.247	32.175		3/27/98 9:59	1.948	-1.002
3/28/98 12:52	40.65	17.105		3/27/98 10:03		-0.857
3/28/98 12:56	42.812	7.45		3/27/98 10:07	1.8107	-0.55
3/28/98 13:00	43.682	3.67		3/27/98 10:11	1.7476	-1.2175
3/28/98 13:04	44.071	1.94		3/27/98 10:15	1.7231	-1.796
3/28/98 13:08	44.302		· · · · · · · · · · · · · · · · · · ·	3/27/98 10:19	1.7007	-1.6635
3/28/98 13:12	44.416	0.635		3/27/98 10:23	1.5041	-0.472
3/28/98 13:16	44.459	0.62		3/27/98 10:27	1.3639	0.7065
3/28/98 13:20	44.507	0.4		3/27/98 10:31	1.368	0.9605
3/28/98 13:24	44.543	0.22	•	3/27/98 10:35	1.4097	1.096
3/28/98 13:28	44.583	-0.26		3/27/98 10:39	1.5052	0.4685
3/28/98 13:32	44.587	-0.385		3/27/98 10:43	1.5601	0.401
3/28/98 13:36	44.587	-0.315	•	3/27/98 10:47	1.6289	0.039
3/28/98 13:40	44.531	-0.055		3/27/98 10:51	1.5989	0.696
3/28/98 13:44	44.51	0.07		3/27/98 10:55	1.6403	6.0215
3/28/98 13:48	44.524	-0.675		3/27/98 10:59	1.6367	14.683
3/28/98 13:52	44.52	-8.735		3/27/98 11:03	1.7381	24.479
3/28/98 13:56	44.524	-18.99		3/27/98 11:07	2.8446	29.7405
3/28/98 14:00	44.389	-28.93		3/27/98 11:11	4.5733	32.3685
3/28/98 14:04	42.773	-32.095		3/27/98 11:15	6.6339	33.3405
3/28/98 14:08	40.726	-33.405		3/27/98 11:19	8.7927	33.9565
3/28/98 14:12	38.603	-34.385		3/27/98 11:23	11.047	34.185
3/28/98 14:16	36.354	-34.01	the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of th	3/27/98 11:27	13.302	34.435
3/28/98 14:20	34.045	-28.43		3/27/98 11:31	15.584	34.65
3/28/98 14:24	31.726	-2.25		3/27/98 11:35	17.884	34.885
3/28/98 14:28	29.552	4.36		3/27/98 11:39	20.189	35.015
3/28/98 14:32	28.359	5.45		3/27/98 11:43	22.514	35.225
4/13/98 17:21	31.276	-16.195		3/27/98 11:47	24.861	35.045
4/13/98 17:25	30.424	-15.57		3/27/98 11:51	27.192	35.22
4/13/98 17:29	29.449	-19.005		3/27/98 11:55	29.559	34.985
4/13/98 17:33	28.037	-16.73		3/27/98 11:59	31.87	34.935
4/13/98 17:37	27.31	-15.095		3/27/98 12:03	34.236	34.18
4/13/98 17:41	25.648	-7.885		3/27/98 12:07	36.556	32.42
4/13/98 17:45	24.691	-3.67		3/27/98 12:11	38.857	26.27
4/13/98 17:49	24.291	-1.8		3/27/98 12:15	41.072	18.01
4/13/98 17:53	24.071	-0.815		3/27/98 12:19	43.04	9.72
4/13/98 17:57	23.957	-0.465		3/27/98 12:23	44.111	5.23
4/13/98 18:01	23.931	-0.47	•	3/27/98 12:27	44.674	2.985
4/13/98 18:05	23.908	-0.41		3/27/98 12:31	44.984	1.775
4/13/98 18:09	23.864	-0.41		3/27/98 12:35	45.157	0.525
4/13/98 18:13	23.837	0.045		3/27/98 12:39	45.271	-0.32
4/13/98 18:17		0.045		3/27/98 12:43	45.339	-1.225
	23.826				45.262	-1.395
4/13/98 18:21	23.84	0.23		3/27/98 12:47 3/27/98 12:51	45.262 45.207	-1.395 -1.325
4/13/98 18:25	23.846	0.14				
4/13/98 18:29	23.856	0.035		3/27/98 12:55	45.094 44.983	-0.96 -6.59
4/13/98 18:33	23.886	-0.07		3/27/98 12:59		
4/13/98 18:37	23.874	0.055		3/27/98 13:03	44.942	-17.95
4/13/98 18:41	23.863	0.205		3/27/98 13:07	44.902	-31.42
4/13/98 18:45	23.872	-0.015		3/27/98 13:11	43.665	-39.24

4/13/98 18:49	23.885	-0.035		3/27/98 13:15	41.352	<b>-4</b> 0.36
4/13/98 18:53	23.904	0.04		3/27/98 13:19	38.618	-38.52
4/13/98 18:57	23.869	4.67		3/27/98 13:23	35.817	-31.7
4/13/98 19:01	23.878	12.015		3/27/98 13:27	33.28	-28.56
4/13/98 19:05	23.912	20.38		3/27/98 13:31	30.914	-33.315
4/13/98 19:09	24.803	24.79		3/27/98 13:35	29.477	20.3
4/13/98 19:13	26.281	26.57	* ** · · · ·	3/27/98 13:39	27.568	22.14
4/13/98 19:17	27.988	27.47		3/27/98 13:43	24.251	33.97
4/13/98 19:21	29.761	27.925		4/13/98 17:21	33.537	-19.705
4/13/98 19:25	31.595	28.22		4/13/98 17:25	31.996	-20.45
4/13/98 19:29	33.482	28.2	•	4/13/98 17:29	31.045	-19.05
4/13/98 19:33	35.346	28.275		4/13/98 17:33	29.596	-20.705
4/13/98 19:37	37.239	28.27		4/13/98 17:37	27.906	-15.49
4/13/98 19:41	39.122	28.3		4/13/98 17:41	27.235	-14.265
4/13/98 19:45	41.001	28.315		4/13/98 17:45		-6.355
4/13/98 19:49	42.893	28.31		4/13/98 17:49	24.808	-3.765
4/13/98 19:53	44.782	28.285		4/13/98 17:53	24.382	-2.16
4/13/98 19:57	46.664	28.285		4/13/98 17:57	24.184	-1.285
4/13/98 20:01	48.555	28.205		4/13/98 18:01	24.055	-0.88
4/13/98 20:05	50.439	28.01		4/13/98 18:05	23.95	-0.205
4/13/98 20:09	52.321	25.875		4/13/98 18:09	23.927	-0.125
4/13/98 20:13	54.196	23.66		4/13/98 18:13	23.879	0.04
4/13/98 20:17	56.041	17.915		4/13/98 18:17	23.909	-0.06
4/13/98 20:21	57.496	12.365		4/13/98 18:21	23.902	-0.08
4/13/98 20:25	58.928	6.345		4/13/98 18:25	23.887	0.04
4/13/98 20:29	59.624	3.33		4/13/98 18:29	23.897	0.035
4/13/98 20:33	59.969	1.8		4/13/98 18:33	23.886	0.035
4/13/98 20:37	60.197	0.875		4/13/98 18:37	23.895	0.055
4/13/98 20:41	60.29	0.5		4/13/98 18:41	23.904	0.1
4/13/98 20:45	60.329	0.495		4/13/98 18:45	23.893	0.19
4/13/98 20:49	60.372	0.433		4/13/98 18:49	23.906	-0.14
4/13/98 20:53	60.39	0.115		4/13/98 18:53	23.924	-0.575
4/13/98 20:57	60.428	0.115		4/13/98 18:57	23.931	3.635
4/13/98 21:01	60.4	0.003		4/13/98 19:01	23.878	10.57
4/13/98 21:05	60.413	0.045		4/13/98 19:05	23.809	18.94
4/13/98 21:09	60.429	-0.03		4/13/98 19:09	24.658	23.565
4/13/98 21:13	60.406	0.065		4/13/98 19:13	25.992	26.075
4/13/98 21:17	60.422	0.085		4/13/98 19:17	27.597	27.19
4/13/98 21:21	60.423	0.003	•	4/13/98 19:21	29.371	27.645
4/13/98 21:25	60.419	0.00	•	4/13/98 19:25	31.207	27.84
4/13/98 21:29	60.439	-0.1		4/13/98 19:29	33.035	28.12
4/13/98 21:33	60.439	0.1		4/13/98 19:33	34.9	28.3
4/13/98 21:37	60.439	0.015		4/13/98 19:37	36.775	28.395
4/13/98 21:41	60.439	0.015		4/13/98 19:41	38.659	28.325
4/13/98 21:45	60.419	0.115		4/13/98 19:45	40.56	28.24
4/13/98 21:49 4/13/9 <u>8</u> 21:49	60.439	0.015		4/13/98 19:49	42.454	28.33
4/13/98 21:53	60.442	-0.075		4/13/98 19:53	44.324	28.41
4/13/98 21:53 4/13/98 21:57	60.442	-0.075 0.015		4/13/98 19:57	46.208	28.505
4/13/98 22:01	60.442	-0.015		4/13/98 20:01	48.12	28.525
41 13130 ZZ.U I	00.407	-0.010		7/10/00 20.01	70.12	20.020

4/13/98 22:05	60.427	0.205		4/13/98 20:05	50.006	28.62
4/13/98 22:09	60.445	0.01	•	4/13/98 20:09	51.909	26.675
4/13/98 22:13	60.464	-0.07		4/13/98 20:13	53.825	24.74
4/13/98 22:17	60.468	0.035		4/13/98 20:17	55.73	18.89
4/13/98 22:21	60.447	0.14		4/13/98 20:21	57.244	13.625
4/13/98 22:25	60.45	0.105		4/13/98 20:25	58.773	7.12
4/13/98 22:29	60.475	-0.025		4/13/98 20:29	59.508	4.2
4/13/98 22:33	60.475	-0.12		4/13/98 20:33	59.969	2.38
4/13/98 22:37	60.471	-0.095		4/13/98 20:37	60.197	1.455
4/13/98 22:41	60.47	0.095		4/13/98 20:41	60.348	0.79
4/13/98 22:45	60.451	0.105		4/13/98 20:45	60.445	0.59
4/13/98 22:49	60.452	0.115		4/13/98 20:49	60.488	0.43
4/13/98 22:53	60.489	-0.17	•	4/13/98 20:53	60.506	0.4
4/13/98 22:57	60.472	-0.165		4/13/98 20:57	60.563	0.1
4/13/98 23:01	60.475	-0.085		4/13/98 21:01	60.574	0.03
4/13/98 23:05	60.455	0.03		4/13/98 21:05	60.586	0.145
4/13/98 23:09	60.439	0.015		4/13/98 21:09	60.583	0.065
4/13/98 23:13	60.458	0.11		4/13/98 21:13	60.58	0.16
4/13/98 23:17	60.461	-0.1		4/13/98 21:17	60.615	-0.015
4/13/98 23:21	60.442	0.095		4/13/98 21:21	60.596	-0.015
4/13/98 23:25	60.48	-0.115		4/13/98 21:25	60.612	0.005
4/13/98 23:29	60.441	0.175		4/13/98 21:29	60.612	0.005
4/13/98 23:33	60.461	0.095	· ·	4/13/98 21:33	60.593	0.1
4/13/98 23:37	60.457	0.055		4/13/98 21:37	60.613	0.115
4/13/98 23:41	60.476	-0.04		4/13/98 21:41	60.613	0.115
4/13/98 23:45	60.48	-0.105		4/13/98 21:45	60.613	0.115
4/13/98 23:49	60.468	0.125		4/13/98 21:49	60.636	-0.075
4/13/98 23:53	60.468	0.175		4/13/98 21:53	60.636	0.015
4/13/98 23:57	60.459	0.16		4/13/98 21:57	60.636	0.11
4/14/98 0:01	60.493	-0.085		4/13/98 22:01	60.621	0.085
4/14/98 0:05	60.503	-0.12		4/13/98 22:05	60.639	0.11
4/14/98 0:09	60.491	-0.04		4/13/98 22:09	60.658	-0.09
4/14/98 0:13	60.476	-0.045		4/13/98 22:13	60.638	0.215
4/14/98 0:17	60.479	-0.025		4/13/98 22:17	60.661	0.035
4/14/98 0:21	60.483	-2.64		4/13/98 22:21	60.64	0.235
4/14/98 0:25	60.467	-7.955		4/13/98 22:25	60.681	-0.185
4/14/98 0:29	60.474	-13.395		4/13/98 22:29	60.668	0.075
4/14/98 0:33	59.955	-15.965		4/13/98 22:33	60.687	-0.215
4/14/98 0:37	58.876	-15.235		4/13/98 22:37	60.644	0.195
4/14/98 0:41	57.795	-13.86		4/13/98 22:41	60.683	-0.005
4/14/98 0:45	56.762	-12.64	•	4/13/98 22:45	60.644	0.105
4/14/98 0:49	55.829	-12.35		4/13/98 22:49	60.683	-0.075
4/14/98 0:53	55.023	-11.735		4/13/98 22:53	60.682	0.025
4/14/98 0:57	54.234	-14.05		4/13/98 22:57	60.665	-0.07
4/14/98 1:01	53.359	-14.97		4/13/98 23:01	60.668	-0.085
4/14/98 1:05	52.676	-19.555	•	4/13/98 23:05	60.687	-0.065
4/14/98 1:09	51.424	-14.78		4/13/98 23:09	60.651	0.21
4/14/98 1:13	50.365	-11.28		4/13/98 23:13	60.651	0.21
4/14/98 1:17	48.765	-4.19		4/13/98 23:17	60.674	-0.1
				-		

4/14/98 1:21	48.468	-3.985		4/13/98 23:21	60.693	-0.295
4/14/98 1:25	48.109	-8.53	<b>;</b>	4/13/98 23:25	60.693	-0.215
4/14/98 1:29	47.927	-10.7		4/13/98 23:29	60.654	0.175
4/14/98 1:33	47.671	-17.375	•	4/13/98 23:33	60.634	0.195
4/14/98 1:37	46.403	-19.33		4/13/98 23:37	60.65	0.245
4/14/98 1:41	45.787	-24.85		4/13/98 23:41	60.689	-0.045
4/14/98 1:45	44.196	-26.03		4/13/98 23:45	60.673	0.09
4/14/98 1:49	42.537	-27.02		4/13/98 23:49	60.699	-0.065
4/14/98 1:53	40.817	-27.82		4/13/98 23:53	60.68	0.085
4/14/98 1:57	38.99	-28.23		4/13/98 23:57	60.691	-0.13
4/14/98 2:01	37.133	-28.515	•	4/14/98 0:01	60.686	0.01
4/14/98 2:05	35.253	-28.635		4/14/98 0:05	60.697	-0.125
4/14/98 2:09	33.344	-26.29		4/14/98 0:09	60.665	0.055
4/14/98 2:13	31.43	-24.16		4/14/98 0:13	60.688	-0.045
4/14/98 2:17	29.526	-21.695		4/14/98 0:17	60.672	0.075
4/14/98 2:21	28.086	-17.12		4/14/98 0:21	60.676	-3.99
4/14/98 2:25	26.598	-10.15		4/14/98 0:25	60.679	-9.985
4/14/98 2:29	25.187	-9.97		4/14/98 0:29	60.687	-17.375
4/14/98 2:33	24.662	-10.395		4/14/98 0:33	59.878	-22.1
4/14/98 2:37	24.568	-11.42		4/14/98 0:37	58.682	-25
4/14/98 2:41	23.193	-5.1		4/14/98 0:41	57.212	-26.89
4/14/98 2:45	22.583	-2.605		4/14/98 0:45	55.458	-27.4
4/14/98 2:49	22.284	-1.36		4/14/98 0:49	53.682	-27.86
4/14/98 2:53	22.173	-0.955		4/14/98 0:53	51.834	-28.31
4/14/98 2:57	22.062	-0.44		4/14/98 0:57	49.978	-28.65
4/14/98 3:01	22.012	-0.23		4/14/98 1:01	48.11	-28.965
4/14/98 3:05	21.982	-0.105		4/14/98 1:05	46.172	-28.805
4/14/98 3:09	21.974	0		4/14/98 1:09	44.248	-28.83
4/14/98 3:13	21.966	-0.025		4/14/98 1:13	42.317	-28.77
4/14/98 3:17	21.961	0.07		4/14/98 1:17	40.411	-28.57
4/14/98 3:21	21.974	-3.135		4/14/98 1:21	38.482	-28.67
4/14/98 3:25	21.961	-12.245		4/14/98 1:25	36.563	-28.975
4/14/98 3:29	21.975	-21.475		4/14/98 1:29	34.697	-29.375
4/14/98 3:33	21.347	-27.545		4/14/98 1:33	32.748	-27.445
4/14/98 3:37	19.512	-27.835		4/14/98 1:37	30.768	-25.815
4/14/98 3:41	17.68	-28.085		4/14/98 1:41	28.822	-22.395
4/14/98 3:45	15.838	-27.8		4/14/98 1:45	27.259	-17.585
4/14/98 3:49	13.945	-28.052	•	4/14/98 1:49	25.605	-10.995
4/14/98 3:53	12.063	-28.2735	•	4/14/98 1:53	24.343	-9.15
4/14/98 3:57	10.278	-29.1515		4/14/98 1:57	23.742	-7.505
4/14/98 4:01	8.3346	-28.8885		4/14/98 2:01	23.406	-6.545
4/14/98 4:05	6.4083	-28.2005		4/14/98 2:05	22.513	-2.72
4/14/98 4:09	4.4477	-28.1915		4/14/98 2:09	22.241	-1.48
4/14/98 4:13	2.5569	-28.6155		4/14/98 2:13	22.097	-0.9
4/14/98 4:17	0.76821	-29.2631		4/14/98 2:17	21.969	-0.4
4/14/98 4:21	-1.1906	-29.013		4/14/98 2:21	21.945	-0.42
4/14/98 4:25	-3.1662	-28.853		4/14/98 2:25	21.917	-0.13
4/14/98 4:29	-5.1802 -5.0844	-28.708		4/14/98 2:29	21.889	-0.13
4/14/98 4:33	-6.9932	-28.199		4/14/98 2:33	21.861	0.075
7/ 17/00 4.00	-0.3302	20.100				

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4/14/98 4:37	-8.9368	-27.766		/98 2:37	21.891	-0.32
4/14/98 4:41	-10.826	-28.155		/98 2:41	21.863	-0.115
4/14/98 4:45	-12.633	-28.79		/98 2:45	21.876	-0.11
4/14/98 4:49	-14.49	-29.24		/98 2:49	21.827	-0.015
4/14/98 4:53	-16.457	-29.23	·	/98 2:53	21.84	-0.225
4/14/98 4:57	-18.391	-28.18		/98 2:57	21.854	-0.13
4/14/98 5:01	-20.338	-28.28		/98 3:01	21.824	-0.125
4/14/98 5:05	-22.303	-21.145		/98 3:05	21.795	0.105
4/14/98 5:09	-24.027	-23.47		/98 3:09	21.828	-0.1
4/14/98 5:13	-25.994	-18.065		/98 3:13	21.799	-0.025
4/14/98 5:17	-26.532	-16.955		/98 3:17	21.816	-0.035
4/14/98 5:21	-28.721	-7.705		/98 3:21	21.808	<b>-</b> 3.865
4/14/98 5:25	-29.607	-3.895		/98 3:25	21.794	-12.875
4/14/98 5:29	-29.923	1.76		/98 3:29	21.809	-22.22
4/14/98 5:33	-30.262	3.09		/98 3:33	21.035	-27.99
4/14/98 5:37	-30.386	4.21		/98 3:37	19.219	-28.38
4/14/98 5:41	-29.571	-0.07		/98 3:41	17.365	-28.53
4/14/98 5:45	-29.644	0.325	4/14/	/98 3:45	15.437	-27.6105
4/14/98 5:49	-29.544	-0.24	4/14/	/98 3:49	13.543	-28.0785
4/14/98 5:53	-29.585	-0.005	4/14/	/98 3:53	11.659	-28.5145
4/14/98 5:57	-29.579	-0.12	4/14/	/98 3:57	9.9149	-29.4985
4/14/98 6:01	-29.592	0.095	4/14/	/98 4:01	7.9273	-29.241
4/14/98 6:05	-29.586	0.07	4/14/	/98 4:05	5.9561	-28.5567
4/14/98 6:09	-29.603	-0.02	4/14/	/98 4:09	4.0152	-28.548
4/14/98 6:13	-29.573	-0.03	4/14/	/98 4:13	2.0791	-28.537
4/14/98 6:17	-29.572	-0.08	4/14/	/98 4:17	0.24477	-29.0779
4/14/98 6:21	-29.607	0.025	4/14/	/98 4:21	-1.6944	-29.0475
4/14/98 6:25	-29.579	-0.205	4/14/	/98 4:25	-3.6283	-29.108
4/14/98 6:29	-29.588	-0.135	4/14/	/98 4:29	-5.5708	-28.741
4/14/98 6:33	-29.602	-0.15	4/14/	/98 4:33	-7.5039	-28.5705
4/14/98 6:37	-29.62	0.105	4/14/	/98 4:37	-9.4499	-27.8005
4/14/98 6:41	-29.615	-0.1	4/14/	/98 4:41	-11.319	-28.3
4/14/98 6:45	-29.632	0.15	4/14/	/98 4:45	-13.218	-28.375
4/14/98 6:49	-29.599	-0.08	4/14/	/98 4:49	-15.01	-29.05
4/14/98 6:53	-29.635	0.195	4/14/	/98 4:53	-16.979	-29.73
4/14/98 6:57	-29.602	-0.015	4/14/	/98 4:57	-18.893	-29.14
4/14/98 7:01	-29.615	-0.365	4/14/	/98 5:01	-20.82	-29.825
4/14/98 7:05	-29.596	0.01	4/14/	/98 5:05	-22.925	-21.645
4/14/98 7:09	-29.605	0.45		/98 5:09	-24.721	-24.1
4/14/98 7:13	-29.688	0.98		/98 5:13	-26.785	-16.81
4/14/98 7:17	-29.594	0.18	4/14/	/98 5:17	-27.254	-16.28
4/14/98 7:21	-29.515	-0.15		/98 5:21	-29.541	-5.955
4/14/98 7:25	-29.492	-0.215		/98 5:25	-30.147	-3.43
4/14/98 7:29	-29.558	0.155		/98 5:29	-30.51	3.635
4/14/98 7:33	-29.545	0.133		/98 5:33	-30.732	3.56
4/14/98 7:37	-29.535	-0.075		/98 <b>5</b> :37	-30.833	4.215
4/14/98 7:41	-29.527	-0.073		/98 5:41	-29.783	-0.885
4/14/98 7:45	-29.527 <b>-</b> 29.539	-0.12		/98 <b>5</b> :45	-30.02	0.445
4/14/98 7:49	-29.559 -29.55	-0.2 -0.075		/98 <b>5:</b> 49	-29.99	0.43
4/ 14/30 / 43	-29.00	-0.075		, JU U, TŲ	20.00	0.20

4/14/98 7:53	-29.551	0.055		4/14/98 5:53	-29.96	0.11
4/14/98 7:57	-29.579	-0.07		4/14/98 5:57	-29.931	0.115
4/14/98 8:01	-29.565	-0.285	•	4/14/98 6:01	-29.944	0.095
4/14/98 8:05	-29.54	-0.25		4/14/98 6:05	-29.938	0.07
4/14/98 8:09	-29.593	0.015		4/14/98 6:09	-29.908	-0.02
4/14/98 8:13	-29.622	0.145		4/14/98 6:13	-29.925	-0.145
4/14/98 8:17	<b>-</b> 29.59	-0.035	· · · · · · · · · · · · · · · · · · ·	4/14/98 6:17	-29.924	0.035
4/14/98 8:21	<b>-2</b> 9.59	0.175	•	4/14/98 6:21	-29.912	-0.095
4/14/98 8:25	-29.593	0.17		4/14/98 6:25	-29.954	-0.09
4/14/98 8:29	-29.597	0.195		4/14/98 6:29	-29.917	-0.25
4/14/98 8:33	-29.555	0.12	•	4/14/98 6:33	-29.931	-0.15
4/14/98 8:37	-29.559	0.07		4/14/98 6:37	-29.972	0.225
4/14/98 8:41	-29.558	-0.01		4/14/98 6:41	-29.967	0.015
4/14/98 8:45	-29.531	-0.095		4/14/98 6:45	<i>-</i> 29.961	0.035
4/14/98 8:49	-29.545	0.13		4/14/98 6:49	<b>-</b> 29.927	-0.08
4/14/98 8:53	-29.56	0.105		4/14/98 6:53	-29.964	0.08
4/14/98 8:57	-29.55	0.05		4/14/98 6:57	<b>-</b> 29. <b>9</b> 54	-0.01
4/14/98 9:01	-29.519	-0.105		4/14/98 7:01	<i>-</i> 29.943	-0.37
4/14/98 9:05	-29.539	-0.085		4/14/98 7:05	-29.948	-0.11
4/14/98 9:09	<b>-</b> 29.54	-0.06		4/14/98 7:09	-29.956	0.21
4/14/98 9:13	<b>-</b> 29.54	-0.06		4/14/98 7:13	-30.017	0.4
4/14/98 9:17	-29.556	0.16		4/14/98 7:17	-29.97	0.065
4/14/98 9:21	-29.552	2.15		4/14/98 7:21	-29.914	-0.15
4/14/98 9:25	-29.552	8.575	****	4/14/98 7:25	-29.937	0.02
4/14/98 9:29	-29.524	17.175		4/14/98 7:29	-29.957	0.035
4/14/98 9:33	-29.122	24.05		4/14/98 7:33	-29.944	0.03
4/14/98 9:37	-27.837	26.69		4/14/98 7:37	-29.933	-0.195
4/14/98 9:41	-26.089	27.285		4/14/98 7:41	-29.95	-0.235
4/14/98 9:45	-24.312	27.845		4/14/98 7:45	-29.938	-0.2
4/14/98 9:49	-22.499	28.425		4/14/98 7:49	-29.972	-0.075
4/14/98 9:53	-20.632	28.695		4/14/98 7:53	-29.997	0.055
4/14/98 9:57	-18.743	28.67		4/14/98 7:57	-29.978	-0.07
4/14/98 10:01	-16.814	28.57		4/14/98 8:01	-29.987	-0.05
4/14/98 10:05	-14.893	28.381		4/14/98 8:05	-29.986	-0.015
4/14/98 10:09	-13.009	28.4305		4/14/98 8:09	-29.992	0.015
4/14/98 10:13	-11.1	28.301		4/14/98 8:13	-29.997	0.025
4/14/98 10:17	-9.2168	28.2455	•	4/14/98 8:17	-29.989	-0.035
4/14/98 10:21	-7.3229	28.2075		4/14/98 8:21	-29.989	0.18
4/14/98 10:25	-5.4398	28.18445		4/14/98 8:25	-29.992	0.055
4/14/98 10:29	-3.5677	28.286		4/14/98 8:29	-29.996	0.075
4/14/98 10:33	-1.6814	28.385		4/14/98 8:33	-29.953	-0.115
4/14/98 10:37	0.19709	28.30805		4/14/98 8:37	-29.981	-0.05
4/14/98 10:41	2.0895	28.317		4/14/98 8:41	-29.981	-0.36
4/14/98 10:45	3.9956	28.3525		4/14/98 8:45	-29.976	0.02
4/14/98 10:49	5.8587	28.5115		4/14/98 8:49	-29.991	-0.105
4/14/98 10:53	7.7529	28.6205		4/14/98 8:53	-30.053	0.225
4/14/98 10:57	9.6661	28.5195		4/14/98 8:57	<i>-</i> 29.972	-0.07
4/14/98 11:01	11.561	28.435		4/14/98 9:01	-30.012	-0.105
4/14/98 11:05	13.477	28.3		4/14/98 9:05	-30.008	-0.085

				•		
4/14/98 11:09	15.37	28.24		4/14/98 9:09	-29.986	-0.055
4/14/98 11:13	17.248	27.185		4/14/98 9:13	-30.033	0.06
4/14/98 11:17	19.137	20.76		4/14/98 9:17	-30.025	0.04
4/14/98 11:21	21.018	12.195		4/14/98 9:21	-29.997	1.445
4/14/98 11:25	22.685	4.99		4/14/98 9:25	-30.021	8.465
4/14/98 11:29	23.289	1.255		4/14/98 9:29	-30.017	17.315
4/14/98 11:33	23.457	-1.65		4/14/98 9:33	-29.708	24.78
4/14/98 11:37	23.683	-3.305	·	4/14/98 9:37	-28.328	27.185
4/14/98 11:41	23.54	-2.825		4/14/98 9:41	-26.554	27.315
4/14/98 11:45	23.127	-0.975		4/14/98 9:45	-24.752	27.76
4/14/98 11:49	23.022	-0.46	•	4/14/98 9:49	-22.891	27.885
4/14/98 11:53	22.975	-0.235	•	4/14/98 9:53	-21.091	28.615
4/14/98 11:57	22.932	0.37	•	4/14/98 9:57	-19.2	28.705
4/14/98 12:01	22.93	5.625		4/14/98 10:01	-17.314	28.49
4/14/98 12:05	22.928	13.26		4/14/98 10:05	-15.368	28.4125
4/14/98 12:09	23.006	21.315		4/14/98 10:09	-13.459	28.4585
4/14/98 12:13	24.055	25.31		4/14/98 10:13	-11.616	28.7795
4/14/98 12:17	25.58	26.765		4/14/98 10:17	-9.6855	28.4965
4/14/98 12:21	27.269	27.63		4/14/98 10:21	-7.7673	28.6755
4/14/98 12:25	29.117	27.815		4/14/98 10:25	-5.8601	28.7576
4/14/98 12:29	30.933	28.105		4/14/98 10:29	-3.9862	29.2915
4/14/98 12:33	32.795	28.15		4/14/98 10:33	-2.0322	28.8405
4/14/98 12:37	34.68	28.245		4/14/98 10:37	-0.10858	29.0819
4/14/98 12:41	36.554	28.34		4/14/98 10:41	1.8721	28.331
4/14/98 12:45	38.425	28.295		4/14/98 10:45	3.7359	28.6895
4/14/98 12:49	40.329	28.355		4/14/98 10:49	5.7078	28.306
4/14/98 12:53	42.222	28.23		4/14/98 10:53	7.5383	28.5285
4/14/98 12:57	44.084	28.37		4/14/98 10:57	9.4738	28.316
4/14/98 13:01	46	28.3		4/14/98 11:01	11.369	28.45
4/14/98 13:05	47.868	28.24		4/14/98 11:05	13.244	28.52
4/14/98 13:09	49.758	28.13		4/14/98 11:09	15.137	28.47
4/14/98 13:13	51.66	28.075		4/14/98 11:13	17.059	26.57
4/14/98 13:17	53.516	26.975		4/14/98 11:17	18.948	18.59
4/14/98 13:21	55.384	25.565		4/14/98 11:21	20.831	10.845
4/14/98 13:25	57.275	18.805		4/14/98 11:25	22.373	3.855
4/14/98 13:29	58.911	11.165		4/14/98 11:29	22.666	0.53
4/14/98 13:33	60.497	3.675		4/14/98 11:33	23	-2.585
4/14/98 13:37	61.036	1.115		4/14/98 11:37	23.144	-3.73
4/14/98 13:41	61.144	0.435		4/14/98 11:41	22.772	-2.105
4/14/98 13:45	61.232	-2.54		4/14/98 11:45	22.483	-0.875
4/14/98 13:49	61.259	-3.665		4/14/98 11:49	22.398	-0.355
4/14/98 13:53	61.231	-4.03		4/14/98 11:53	22.351	0.08
4/14/98 13:57		-1.715		4/14/98 11:57	22.308	1.83
4/14/98 14:01	60.724 60.526	-1.715		4/14/98 12:01	22.327	8.015
4/14/98 14:01 4/14/98 14:05			•	4/14/98 12:05	22.367	15.55
	60.425	-0.39 -0.08		4/14/98 12:09	22.674	22.875
4/14/98 14:09	60.381	-0.08		4/14/98 12:13	23.93	25.625
4/14/98 14:13	60.364	-0.115 0.055		4/14/98 12:17	25.93 25.477	27.075
4/14/98 14:17	60.347	-0.055		4/14/98 12:21	27.249	27.625
4/14/98 14:21	60.365	-0.09		4/ 14/30 12.2 (	21.273	21.020

4/14/98 14:25	60.341	-0.03		4/14/98 12:25	29.055	28.025
4/14/98 14:29	60.336	-0.065		4/14/98 12:29	30.892	28.21
4/14/98 14:33	60.347	-0.165		4/14/98 12:33	32.774	28.255
4/14/98 14:37	60.335	-0.07		4/14/98 12:37	34.66	28.345
4/14/98 14:41	60.323	0.14		4/14/98 12:41	36.534	28.44
4/14/98 14:45	60.314	0.14		4/14/98 12:45	38.425	28.395
4/14/98 14:49	60.321	0.065		4/14/98 12:49	40.329	28.455
4/14/98 14:53	60.351	-0.125		4/14/98 12:53	42.222	28.43
4/14/98 14:57	60.322	0.095		4/14/98 12:57	44.104	28.465
4/14/98 15:01	60.334	0.035		4/14/98 13:01	46.02	28.495
4/14/98 15:05	60.326	-0.02	• .	4/14/98 13:05	47.908	28.53
4/14/98 <b>1</b> 5:09	60.341	-0.02		4/14/98 13:09	49.797	28.715
4/14/98 15:13	60.349	0.05	•	4/14/98 13:13	51.719	28.755
4/14/98 15:17	60.322	0.05		4/14/98 13:17	53.614	26.703
4/14/98 15:21	60.329	0.03		4/14/98 13:21	55.54	25.555
4/14/98 15:25	60.359	0.19		4/14/98 13:25	57.47	16.675
4/14/98 <b>1</b> 5:29	60.333	0.175		4/14/98 13:29	59.008	7.01
4/14/98 15:33	60.367	-0.1		4/14/98 13:33	60.651	-1.63
4/14/98 <b>15</b> :37	60.391	-0.1 -0.285		4/14/98 13:37	60.805	-2.655
4/14/98 15:31				4/14/98 13:41	60.41	-0.82
4/14/98 15:45	60.367	-0.035		4/14/98 13:45	60.325	-0.32
4/14/98 15:49	60.347	0.005		4/14/98 13:49	60.274	-0.32
	60.334	0.105		4/14/98 13:53	60.246	-0.36 -0.265
4/14/98 15:53	60.36	-0.07	and the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of the same of th	4/14/98 13:57	60.261	-0.265
4/14/98 15:57	60.348	0.06		4/14/98 14:01	60.198	0.06
4/14/98 16:01	60.355	0		4/14/98 14:05	60.193	-0.1
4/14/98 16:05	60.346	0.1			60.208	-0.18
4/14/98 16:09	60.36	-0.035		4/14/98 14:09	60.20	-0.18 -0.12
4/14/98 16:13	60.355	-0.07		4/14/98 14:13	60.173	0.12
4/14/98 16:17	60.366	-0.13		4/14/98 14:17	60.173	0.04
4/14/98 16:21	60.353	-0.025		4/14/98 14:21		0.2
4/14/98 16:25	60.341	-0.02		4/14/98 14:25	60.186 60.181	0.003
4/14/98 16:29	60.34	0.005		4/14/98 14:29	60.161	0.13
4/14/98 16:33	60.348	0.065		4/14/98 14:33		
4/14/98 16:37	60.337	0.14		4/14/98 14:37	60.199	-0.16
4/14/98 16:41	60.341	0.14		4/14/98 14:41	60.207	-0.05
4/14/98 16:45	60.361	-0.055		4/14/98 14:45	60.217	-0.055
4/14/98 16:49	60.365	-0.075		4/14/98 14:49	60.167	0.16
4/14/98 16:53	60.369	-0.115		4/14/98 14:53	60.197	-0.125
4/14/98 16:57	60.35	0.105		4/14/98 14:57	60.206	0
4/14/98 17:01	60.35	-0.19		4/14/98 15:01	60.199	-0.02
4/14/98 17:05	60.346	-0.06		4/14/98 15:05	60.172	0.17
4/14/98 17:09	60.371	-0.17		4/14/98 15:09	60.206	0.135
4/14/98 17:13	60.312	0.215		4/14/98 15:13	60.195	0.05
4/14/98 17:17	60.334	0.105		4/14/98 15:17	60.206	0.05
4/14/98 17:21	60.337	0.105		4/14/98 15:21	60.233	-0.005
4/14/98 17:25	60.355	-2.96		4/14/98 15:25	60.205	0.16
4/14/98 17:29	60.355	-8.97		4/14/98 15:29	60.216	0.08
4/14/98 17:33	60.358	-17		4/14/98 15:33	60.232	-0.1
4/14/98 17:37	59.763	-22.975		4/14/98 15:37	60.237	-0.095

4/14/98 17:41	58.561	-26.125		4/14/98 15:41	60.232	-0.035
4/14/98 17:45	56.958	-27.495		4/14/98 15:45	60.212	0.1
4/14/98 17:49	55.168	-28.045		4/14/98 15:49	60.218	0.105
4/14/98 17:53	53.336	-28.34		4/14/98 15:53	60.225	-0.07
4/14/98 17:57	51.459	-28.285		4/14/98 15:57	60.232	-0.035
4/14/98 18:01	49.559	-28.245		4/14/98 16:01	60.239	-0.095
4/14/98 18:05	47.668	-28.585	:	4/14/98 16:05	60.211	0
4/14/98 18:09	45.802	-28.66		4/14/98 16:09	60.225	-0.13
4/14/98 18:13	43.91	-28.81	•	4/14/98 16:13	60.22	0.025
4/14/98 18:17	41.951	-28.335		4/14/98 16:17	60.211	-0.03
4/14/98 18:21	40.07	-28.61	•	4/14/98 16:21	60.199	0.165
4/14/98 18:25	38.148	-28.575		4/14/98 16:25	60.225	-0.115
4/14/98 18:29	36.284	-28.97	•	4/14/98 16:29	60.205	-0.09
4/14/98 18:33	34.348	-28.96		4/14/98 16:33	60.232	-0.03
4/14/98 18:37	32.433	-24.745		4/14/98 16:37	60.202	0.14
4/14/98 18:41	30.49	-23.915		4/14/98 16:41	60.187	0.135
4/14/98 18:45	28.556	-19.035		4/14/98 16:45	60.226	0.04
4/14/98 18:49	27.484	-15.975		4/14/98 16:49	60.23	0.02
4/14/98 18:53	25.707	-8.165		4/14/98 16:53	60.214	0.18
4/14/98 18:57	24.749	-3.845		4/14/98 16:57	60.234	-0.09
4/14/98 19:01	24.289	-1.835		4/14/98 17:01	60.234	0
4/14/98 19:05	24.074	-0.815		4/14/98 17:05	60.25	0.03
4/14/98 19:09	23.98	-0.375	·	4/14/98 17:09	60.216	0.025
4/14/98 19:13	23.922	-0.245		4/14/98 17:13	60.234	-0.07
4/14/98 19:17	23.911	-0.245		4/14/98 17:17	60.256	-0.085
4/14/98 19:21	23.905	-0.185		4/14/98 17:21	60.221	0.01
4/14/98 19:25	23.873	0.02	•	4/14/98 17:25	60.22	-3.74
4/14/98 19:29	23.862	0.125		4/14/98 17:29	60.239	-10.52
4/14/98 19:33	23.868	-0.065		4/14/98 17:33	60.223	-18.85
4/14/98 19:37	23.877	-2.45		4/14/98 17:37	59.472	-24.25
4/14/98 19:41	23.887	-11.77		4/14/98 17:41	58.135	-26.93
4/14/98 19:45	23.855	-21.105		4/14/98 17:45	56.453	-28.115
4/14/98 19:49	23.387	-28.3		4/14/98 17:49	54.622	-28.175
4/14/98 19:53	21.533	-28.39		4/14/98 17:53	52.749	-28.375
4/14/98 19:57	19.634	-28.315		4/14/98 17:57	50.83	-28.215
4/14/98 20:01	17.727	-28.345		4/14/98 18:01	48.987	-28.57
4/14/98 20:05	15.855	-28.5		4/14/98 18:05	47.074	-28.515
4/14/98 20:09	13.971	-28.7655		4/14/98 18:09	45.187	-28.695
4/14/98 20:13	12.058	-28.584		4/14/98 18:13	43.273	-28.645
4/14/98 20:17	10.155	-28.735		4/14/98 18:17	41.371	-28.675
4/14/98 20:21	8.2179	-28.507		4/14/98 18:21	39.448	-28.545
4/14/98 20:25	6.3412	-28.7524		4/14/98 18:25	37.544	-28.815
4/14/98 20:29	4.408	-29.1975		4/14/98 18:29	35.636	-28.695
4/14/98 20:33	2.5165	-28.799		4/14/98 18:33	33.739	-28.79
4/14/98 20:37	0.59073	-28.5092		4/14/98 18:37	31.781	-24.575
4/14/98 20:41	-1.4315	-27.668		4/14/98 18:41	29.897	-24.15
4/14/98 20:45	-3.2433	-28.0315		4/14/98 18:45	27.981	-18.44
4/14/98 20:49	-5.1111	-28.0445		4/14/98 18:49	26.866	-14.75
4/14/98 20:53	-6.9651	-28.4145		4/14/98 18:53	25.067	-7.555

4/14/98 20:57	-8.8496	<i>-</i> 28.687	4/14/98 18:57	24.293	-4.365
4/14/98 21:01	-10.72	-28.945	4/14/98 19:01	23.916	-2.355
4/14/98 21:05	-12.648	-28.87	4/14/98 19:05	23.556	-0.61
4/14/98 21:09	-14.587	-28.785	4/14/98 19:09	23.42	0.04
4/14/98 21:13	-16.509	-28.855	4/14/98 19:13	23.445	-0.14
4/14/98 21:17	-18.422	-28.785	4/14/98 19:17	23.434	-0.035
4/14/98 21:21	-20.344	-28.64	4/14/98 19:21	23.428	0.125
4/14/98 21:25	-22.28	-21.735	4/14/98 19:25	23.417	0.02
4/14/98 21:29	<b>-24.179</b>	-22.02	4/14/98 19:29	23.427	0.015
4/14/98 21:33	-26.072	-18.16	4/14/98 19:33	23.453	-0.48
4/14/98 21:37	-26.627	-17.95	4/14/98 19:37	23.421	-0.38
4/14/98 21:41	-28.583	-9.145	4/14/98 19:41	23.43	-7.09
4/14/98 21:45	<b>-</b> 29.704	-4.35	4/14/98 19:45	23.357	-16.21
4/14/98 21:49	-30.217	-1.875	4/14/98 19:49	23.345	-25.675
4/14/98 21:53	-30.412	-0.985	4/14/98 19:53	22.012	-28.575
4/14/98 21:57	<b>-</b> 30.574	-0.38	4/14/98 19:57	20.115	-28.71
4/14/98 22:01	-30.592	-0.24	4/14/98 20:01	18.21	-28.845
4/14/98 22:05	-30.609	-0.22	4/14/98 20:05	16.297	-28.79
4/14/98 22:09	-30.65	0.09	4/14/98 20:09	14.373	-28.633
4/14/98 22:13	-30.64	-0.48	4/14/98 20:13	12.441	-28.24
4/14/98 22:17	-30.653	0.1	4/14/98 20:17	10.539	-28.3865
4/14/98 22:21	-30.632	0.16	4/14/98 20:21	8.6464	-28.588
4/14/98 22:25	-30.736	0.75	4/14/98 20:25	6.793	-29.1586
4/14/98 22:29	-30.633	0.185	4/14/98 20:29	4.8617	-29.1669
4/14/98 22:33	-30.6	0.14	4/14/98 20:33	2.9288	-28.4415
4/14/98 22:37	-30.586	-0.085	4/14/98 20:37	0.96128	-28.1539
4/14/98 22:41	-30.596	-0.055	4/14/98 20:41	-0.97167	-27.7492
4/14/98 22:45	-30.572	-0.31	4/14/98 20:45	-2.7595	<b>-</b> 28. <b>44</b> 5
4/14/98 22:49	-30.603	-0.195	4/14/98 20:49	-4.6695	-28.3525
4/14/98 22:53	-30.607	-0.2	4/14/98 20:53	-6.5215	-28.7225
4/14/98 22:57	-30.634	-0.18	4/14/98 20:57	-8.4485	-28.8825
4/14/98 23:01	-30.642	-0.045	4/14/98 21:01	-10.34	-29.37
4/14/98 23:05	-30.647	0.08	4/14/98 21:05	-12.266	-29.41
4/14/98 23:09	-30.67	0.17	4/14/98 21:09	-14.225	-29.105
4/14/98 23:13	-30.651	0.075	4/14/98 21:13	-16.214	-28.945
4/14/98 23:17	-30.631	0.075	4/14/98 21:17	-18.148	-28.765
4/14/98 23:21	-30.636	-0.04	4/14/98 21:21	-20.046	-28.735
4/14/98 23:25	-30.636	0.035	· · · ·	-22.003	-26.38
4/14/98 23:29	-30.616	-0.23	4/14/98 21:29	-23.901	-18.97
4/14/98 23:33	-30.644	0.01	4/14/98 21:33	-25.793	-20.845
4/14/98 23:37	-30.629	-0.11	4/14/98 21:37	-27.279	-16.215
4/14/98 23:41	-30.662	0.01	4/14/98 21:41	-27.695	-15.58
4/14/98 23:45	<b>-</b> 30.642	0.005	4/14/98 21:45	-29.962	-4.71
4/14/98 23:49	-30.651	0.145	4/14/98 21:49	-30.522	-1.995
4/14/98 23:53	-30.66	-0.065	4/14/98 21:53	-30.811	-0.99
4/14/98 23:57	-30.641	-0.065	4/14/98 21:57	-30.904	-0.495
4/15/98 0:01	-30.622	-0.18	4/14/98 22:01	-30.921	-0.475
4/15/98 0:05	-30.673	-0.035	4/14/98 22:05	-31.009	0.015
4/15/98 0:09	<b>-</b> 30.654	-0.65	4/14/98 22:09	-31.003	-0.025

4/15/98 0:13	-30.658	-0.33		4/14/98 22:13	-31.016	-0.25
4/15/98 0:17	-30.68	0.225		4/14/98 22:17	-31.006	-0.015
4/15/98 0:21	-30.784	0.7		4/14/98 22:21	-31.008	0.16
4/15/98 0:25	-30.724	0.705		4/14/98 22:25	-31.066	0.405
4/15/98 0:29	-30.635	0.1		4/14/98 22:29	-31.009	0.415
4/15/98 0:33	-30.644	0.305		4/14/98 22:33	-30.976	0.14
4/15/98 0:37	-30.583	-0.275	• • •	4/14/98 22:37	-30.985	0.38
4/15/98 0:41	-30.615	-0.125		4/14/98 22:41	-30.926	0.07
4/15/98 0:45	-30.583	-0.34		4/14/98 22:45	-30.948	0.16
4/15/98 0:49	-30.638	-0.08		4/14/98 22:49	-30.909	-0.08
4/15/98 0:53	-30.64	-0.09	•	4/14/98 22:53	-30.912	0.035
4/15/98 0:57	-30.651	-0.19		4/14/98 22:57	-30.916	-0.065
4/15/98 1:01	-30.654	-0.1	•	4/14/98 23:01	-30.925	0.08
4/15/98 1:05	-30.658	0.015		4/14/98 23:05	-30.905	-0.045
4/15/98 1:09	-30.689	0.01		4/14/98 23:09	-30.929	0.175
4/15/98 1:13	-30.674	0.15		4/14/98 23:13	-30.909	-0.045
4/15/98 1:17	-30.655	-0.085		4/14/98 23:17	-30.914	-0.04
4/15/98 1:21	-30.687	0.035		4/14/98 23:21	-30.894	-0.16
4/15/98 1:25	-30.644	0.01		4/14/98 23:25	<i>-</i> 30.918	-0.32
4/15/98 1:29	-30.672	0.01		4/14/98 23:29	-30.922	-0.11
4/15/98 1:33	-30.68	-0.23		4/14/98 23:33	-30.926	0.005
4/15/98 1:37	-30.642	-0.11		4/14/98 23:37	-30.982	0.245
4/15/98 1:41	-30.67	5.035	<del></del> -	4/14/98 23:41	-30.944	0.125
4/15/98 1:45	-30.726	13.7		4/14/98 23:45	-30.925	-0.105
4/15/98 1:49	-30.664	22.55	• ,	4/14/98 23:49	-30.933	0.03
4/15/98 1:53	-29.663	26.665		4/14/98 23:53	-30.919	-0.065
4/15/98 1:57	-27.986	27.495		4/14/98 23:57	-30.946	0.17
4/15/98 2:01	-26.154	27.715		4/15/98 0:01	-30.927	0.05
4/15/98 2:05	-24.33	27.84		4/15/98 0:05	-30.932	-0.505
4/15/98 2:09	-22.487	28.19		4/15/98 0:09	-30.912	-0.42
4/15/98 2:13	-20.611	28.425		4/15/98 0:13	-30.917	-0.325
4/15/98 2:17	-18.762	28.625		4/15/98 0:17	-31.033	0.58
4/15/98 2:21	-16.849	28.645		4/15/98 0:21	-30.996	0.35
4/15/98 2:25	-14.926	28.438		4/15/98 0:25	-30.982	0.47
4/15/98 2:29	-13.037	28.23		4/15/98 0:29	-30.917	0.095
4/15/98 2:33	-11.12	28.195		4/15/98 0:33	-30.926	0.185
4/15/98 2:37	-9.2384	28.1845		4/15/98 0:37	-30.888	-0.04
4/15/98 2:41	-7.391	28.5235		4/15/98 0:41	-30.898	-0.12
4/15/98 2:45	-5.481	28.28955		4/15/98 0:45	-30.889	-0.1
4/15/98 2:49	-3.6015	28.386		4/15/98 0:49	-30.896	-0.085
4/15/98 2:53	-1.6863	28.263		4/15/98 0:53	-30.922	0.03
4/15/98 2:57	0.17691	28.36045		4/15/98 0:57	-30.909	-0.08
4/15/98 3:01	2.0757	28.367		4/15/98 1:01	-30.913	-0.1
4/15/98 3:05	3.9663	28.355		4/15/98 1:05	-30.916	0.13
4/15/98 3:09	5.849	28.43		4/15/98 1:09	-30.925	0.015
4/15/98 3:13	7.7491	28.2945		4/15/98 1:13	-30.933	0.15
4/15/98 3:17	9.6373	28.2785		4/15/98 1:17	-30.89	-0.2
4/15/98 3:21	11.535	28.205		4/15/98 1:21	-30.922	-0.085
4/15/98 3:25	13.408	28.535		4/15/98 1:25	-30.903	-0.105
				•		

4/15/98 3:29	15.293	27.19		4/15/98 1:29	-30.93	0.005
4/15/98 3:33	17.176	19.955	:	4/15/98 1:33	-30.939	-0.345
4/15/98 3:37	19.115	11.36		4/15/98 1:37	-30.924	0.01
4/15/98 3:41	20.731	4.295		4/15/98 1:41	-30.929	5.745
4/15/98 3:45	21.167	2.485		4/15/98 1:45	-31.008	15.11
4/15/98 3:49	21.387	1.425		4/15/98 1:49	-30.922	23.955
4/15/98 3:53	21.59	0.43		4/15/98 1:53	-29.78	27.595
4/15/98 3:57	21.664	0.285		4/15/98 1:57	-27.986	27.84
4/15/98 4:01	21.672	0.39		4/15/98 2:01	-26.131	27.83
4/15/98 4:05	21.676	0.33		4/15/98 2:05	-24.261	27.95
4/15/98 4:09	21.721	0.12	•	4/15/98 2:09	-22.418	28.3
4/15/98 4:13	21.75	4.045		4/15/98 2:13	-20.565	28.645
4/15/98 4:17	21.742	11.26	•	4/15/98 2:17	-18.671	28.735
4/15/98 4:21	21.745	19.555		4/15/98 2:21	-16.758	28.75
4/15/98 4:25	22.559	24.57		4/15/98 2:25	-14.836	28.657
4/15/98 4:29	23.994	26.65		4/15/98 2:29	-12.924	28.4425
4/15/98 4:33	25.656	27.73		4/15/98 2:33	-11.008	28.409
4/15/98 4:37	27.473	27.985		4/15/98 2:37	-9.1046	28.286
4/15/98 4:41	29.324	28.075		4/15/98 2:41	-7.2355	28.4035
4/15/98 4:45	31.202	28.085		4/15/98 2:45	-5.3262	28.49755
4/15/98 4:49	33.07	28.29		4/15/98 2:49	-3.4474	28.4845
4/15/98 4:53	34.939	28.345		4/15/98 2:53	-1.5548	28.471
4/15/98 4:57	36.819	28.405	<b>—</b> 1	4/15/98 2:57	0.37331	28.45545
4/15/98 5:01	38.728	28.31	•	4/15/98 3:01	2.2495	28.4635
4/15/98 5:05	40.608	28.36		4/15/98 3:05	4.1394	28.558
4/15/98 5:09	42.5	28.3		4/15/98 3:09	6.0644	28.523
4/15/98 5:13	44.39	28.315		4/15/98 3:13	7.9422	28.599
4/15/98 5:17	46.28	28.42	,	4/15/98 3:17	9.851	28.475
4/15/98 5:21	48.16	28.33		4/15/98 3:21	11.769	28.4
4/15/98 5:25	50.053	28.13		4/15/98 3:25	13.662	28.73
4/15/98 5:29	51.964	28.12		4/15/98 3:29	15.546	25.09
4/15/98 5:33	53.826	26.385		4/15/98 3:33	17.449	16.92
4/15/98 5:37	55.679	24.865		4/15/98 3:37	19.408	8.23
4/15/98 5:41	57.588	19.33		4/15/98 3:41	20.564	3.15
4/15/98 5:45	59.103	11.435		4/15/98 3:45	20.833	1.97
4/15/98 5:49	60.652	0.715		4/15/98 3:49	21.054	1.005
4/15/98 5:53	61.454	-4.535		4/15/98 3:53	21.194	0.43
4/15/98 5:57	61.39	-4.84	•	4/15/98 3:57	21.227	0.39
4/15/98 6:01	60.795	-2.215	•	4/15/98 4:01	21.255	0.185
4/15/98 6:05	60.547	-1.055		4/15/98 4:05	21.28	0.125
4/15/98 6:09	60.422	-0.53		4/15/98 4:09	21.305	0.115
4/15/98 6:13	60.352	-0.3		4/15/98 4:13	21.292	4.36
4/15/98 6:17	60.336	-0.02		4/15/98 4:17	21.305	11.68
4/15/98 6:21	60.316	-0.035		4/15/98 4:21	21.328	19.985
4/15/98 6:25	60.292	0.185		4/15/98 4:25	22.164	24.9
4/15/98 6:29	60.332	-0.015		4/15/98 4:29	23.641	26.88
4/15/98 6:33	60.309	0.025		4/15/98 4:33	25.325	27.855
4/15/98 6:37	60.329	-0.13		4/15/98 4:37	27.144	28.205
4/15/98 6:41	60.329	-0.085		4/15/98 4:41	29.017	28.29

4/15/98 6:45	60.314	0.1	4/15/98 4:45	30.896	28.4
4/15/98 6:49	60.303	0.005	4/15/98 4:49	32.785	28.51
4/15/98 6:53	60.312	-0.075	4/15/98 4:53	34.675	28.46
4/15/98 6:57	60.334	-0.13	4/15/98 4:57	36.576	28.52
4/15/98 7:01	60.304	0.025	4/15/98 5:01	38.487	28.32
4/15/98 7:05	60.297	0.1	4/15/98 5:05	40.367	28.575
4/15/98 7:09	60.308	0.005	4/15/98 5:09	42.28	28.51
4/15/98 7:13	60.309	0.01	4/15/98 5:13	44.151	28.525
4/15/98 7:17	60.317	0.015	4/15/98 5:17	46.082	28.525
4/15/98 7:21	60.309	0.08	4/15/98 5:21	47.982	28.635
4/15/98 7:25	60.311	-0.04	4/15/98 5:25	49.856	28.825
4/15/98 7:29	60.32	-0.03	4/15/98 5:29	51.787	28.81
4/15/98 7:33	60.325	-0.095	4/15/98 5:33	53.709	26.97
4/15/98 7:37	60.303	0.085	4/15/98 5:37	55.621	25.635
4/15/98 7:41	60.314	0.105	4/15/98 5:41	57.549	19.525
4/15/98 7:45	60.306	0.025	4/15/98 5:45	59.103	11.145
4/15/98 7:49	60.32	0.045	4/15/98 5:49	60.748	-0.73
4/15/98 7:53	60.335	-0.17	4/15/98 5:53	61.454	-5.405
4/15/98 7:57	60.311	0.085	4/15/98 5:57	61.332	-5.42
4/15/98 8:01	60.329	-0.11	4/15/98 6:01	60.602	-2.025
4/15/98 8:05	60.301	0.11	4/15/98 6:05	60.373	-1.055
4/15/98 8:09	60.328	-0.065	4/15/98 6:09	60.248	-0.43
4/15/98 8:13	60.307	0.03	4/15/98 6:13	60.197	-0.3
4/15/98 8:17	60.323	-0.11	4/15/98 6:17	60.162	-0.02
4/15/98 8:21	60.315	-0.02	4/15/98 6:21	60.162	-0.13
4/15/98 8:25	60.313	-0.035	4/15/98 6:25	60.137	0.095
4/15/98 8:29	60.301	0.095	4/15/98 6:29	60.158	-0.015
4/15/98 8:33	60.311	0.08	4/15/98 6:33	60.136	-0.075
4/15/98 8:37	60.306	0.105	4/15/98 6:37	60.156	0.06
4/15/98 8:41	60.32	-0.08	4/15/98 6:41	60.155	-0.085
4/15/98 8:45	60.327	-0.035	4/15/98 6:45	60.121	0
4/15/98 8:49	60.327	-0.15	4/15/98 6:49	60.168	-0.285
4/15/98 8:53	60.304	0.045	4/15/98 6:53	60.138	0.02
4/15/98 8:57	60.32	-0.055	4/15/98 6:57	60.121	-0.03
4/15/98 9:01	60.297	0.095	4/15/98 7:01	60.111	0.12
4/15/98 9:05	60.313	0.015	4/15/98 7:05	60.142	-0.09
4/15/98 9:09	60.309	0.15	4/15/98 7:09	60.115	0.005
4/15/98 9:13	60.316	-0.06	4/15/98 7:13	60.135	-0.085
4/15/98 9:17	60.316	0.035	4/15/98 7:17	60.124	-0.085
4/15/98 9:21	60.339	0.09	4/15/98 7:21	60.116	-0.115
4/15/98 9:25	60.304	0.14	4/15/98 7:25	60.118	-0.14
4/15/98 9:29	60.323	-0.025	4/15/98 7:29	60.107	-0.125
4/15/98 9:33	60.357	-0.18	4/15/98 7:33	60.093	-0.095
4/15/98 9:37	60.332	-0.10	4/15/98 7:37	60.09	0.09
	00.002		4/15/98 7:41	60.082	0.01
4/15/98 U'A'I	60 312	באנו נו			
4/15/98 9:41 4/15/98 9:45	60.318 60.321	0.085 -1.73			
4/15/98 9:45	60.321	-1.73	4/15/98 7:45	60.074	0.12
4/15/98 9:45 4/15/98 9:49	60.321 60.324	-1.73 -6.915	4/15/98 7:45 4/15/98 7:49	60.074 60.108	0.12 -0.055
4/15/98 9:45	60.321	-1.73	4/15/98 7:45	60.074	0.12

4/15/98 10:01	58.941	-18.49		4/15/98 8:01	60.097	-0.205 [°]
4/15/98 10:05	57.649	-14.82		4/15/98 8:05	60.089	-0.085
4/15/98 10:09	56.023	-8.9		4/15/98 8:09	60.077	0.13
4/15/98 10:13	55.243	-6.9		4/15/98 8:13	60.056	0.225
4/15/98 10:17	54.685	-5.815		4/15/98 8:17	60.072	0.175
4/15/98 10:21	54.243	-5.02		4/15/98 8:21	60.103	-0.12
4/15/98 10:25	53.863	-4.43		4/15/98 8:25	60.101	-0.04
4/15/98 10:29	53.522	-4.145		4/15/98 8:29	60.107	-0.095
4/15/98 10:33	53.239	-3.97		4/15/98 8:33	60.079	0.08
4/15/98 10:37	52.977	-3.9		4/15/98 8:37	60.093	0.01
4/15/98 10:41	52.693	-3.525	•	4/15/98 8:41	60.088	0.02
4/15/98 10:45	52.445	-3.43	•	4/15/98 8:45	60.095	0.06
4/15/98 10:49	52.197	-6.08		4/15/98 8:49	60.095	0.045
4/15/98 10:53	51.988	-6.495		4/15/98 8:53	60.092	-0.055
4/15/98 10:57	51.759	-6.885	<u>.</u>	4/15/98 8:57	60.107	0.045
4/15/98 11:01	50.981	-4.535		4/15/98 9:01	60.104	-0.1
4/15/98 11:05	50.689	-3.02		4/15/98 9:05	60.081	0.115
4/15/98 11:09	50.382	-1.315		4/15/98 9:09	60.116	-0.14
4/15/98 11:13	50.074	0.1		4/15/98 9:13	60.084	-0.06
4/15/98 11:17	50.085	1.22		4/15/98 9:17	60.104	-0.16
4/15/98 11:21	50.119	-1.945		4/15/98 9:21	60.088	-0.105
4/15/98 11:25	50.094	-7.385		4/15/98 9:25	60.072	-0.055
4/15/98 11:29	50.329	-30.245		4/15/98 9:29	60.072	0.17
4/15/98 11:33	49.73	-32.42		4/15/98 9:33	60.067	0.015
4/15/98 11:37	48.617	-26.845	•	4/15/98 9:37	60.061	0.06
4/15/98 11:41	44.28	-8.65		4/15/98 9:41	60.106	-0.21
4/15/98 11:45	43.246	-4.475		4/15/98 9:45	60.07	-2.505
4/15/98 11:49	43.248	-8.795		4/15/98 9:49	60.073	-8.665
4/15/98 11:53	42.55	-13.185		4/15/98 9:53	60.064	-16.835
4/15/98 11:57	42.351	-20.535		4/15/98 9:57	59.569	-23.675
4/15/98 12:01	41.489	-25.305		4/15/98 10:01	58.34	-26.815
4/15/98 12:05	39.913	-26.675		4/15/98 10:05	56.697	-27.685
4/15/98 12:09	38.244	-27.78		4/15/98 10:09	54.834	-27.88
4/15/98 12:13	36.428	-28.385		4/15/98 10:13	52.977	-28.02
4/15/98 12:17	34.578	-28.865		4/15/98 10:17	51.16	-26.11
4/15/98 12:21	32.688	-29.075		4/15/98 10:21	49.258	-23.2
4/15/98 12:25	30.751	-25.07		4/15/98 10:25	47.373	-16
4/15/98 12:29	28.805	-23.4		4/15/98 10:29	45.938	-9.77
4/15/98 12:33	26.873	-17.305	And the second second	4/15/98 10:33	44.618	-3.735
4/15/98 12:37	25.737	-13.275		4/15/98 10:37	44.173	-4.265
4/15/98 12:41	24.125	-6.97		4/15/98 10:41	43.984	-5.38
4/15/98 12:45	23.412	-4.67		4/15/98 10:45	43.871	-5.18
4/15/98 12:49	23.082	-3.655		4/15/98 10:49	43.32	-7.985
4/15/98 12:53	22.731	<b>-2</b> .125		4/15/98 10:53	42.908	-14.02
4/15/98 12:57	22.478	-0.98		4/15/98 10:57	42.835	-22.46
4/15/98 13:01	22.351	-0.325		4/15/98 11:01	41.723	-25.94
4/15/98 13:05	22.306	-0.305		4/15/98 11:05	40.104	-22.54
4/15/98 13:09	22.282	0.04		4/15/98 11:09	38.343	-22.68
4/15/98 13:13	22.286	-0.29		4/15/98 11:13	36.535	-16.92
				•		

	4/15/98 13:17		22.245	0.02				4/15/98 11	:17	35.596	-1	3.76
	4/15/98 13:21		22.29	-0.29	•			4/15/98 11	:21	33.807	•	5,47
	4/15/98 13:25		22.228	3.055				4/15/98 11	:25	33.151		2.64
	4/15/98 13:29		22.249	2.655				4/15/98 11	:29	32.844	-6	.185
	4/15/98 13:33	•	22.232	2.26				4/15/98 11	:33	32.713	1	3.28
	4/15/98 13:37		22.839	-1.17				4/15/98 11	:37	32.623	-21	.225
	4/15/98 13:41		22.78	2.045			•	4/15/98 11	:41	31.607	-25	.505
	4/15/98 13:45	:	22.684	3.645				4/15/98 11	:45	30.057	-	22.6
	4/15/98 13:49	•	22.605	4.315				4/15/98 11	:49	28.378	-2	3.22
	4/15/98 13:53	:	23.189	-10.37				4/15/98 11	:53	26.506		.765
	4/15/98 13:57		23.413	-21.73	•			4/15/98 11	:57	25.537	-14	.585
	4/15/98 14:01	:	23.468	-32.355				4/15/98 12	:01	23.734		.405
	4/15/98 14:05	:	21.115	-30.215				4/15/98 12	:05	22.953		.955
	4/15/98 14:09		19.067	-26.855				4/15/98 12	:09	22.62		-1.5
	4/15/98 14:13		16.997	-19.18				4/15/98 12	:13	22.453	_	0.77
	4/15/98 14:17		15.072	-17.86		,		4/15/98 12	:17	22,362		.315
	4/15/98 14:21		13.696	-19.7185				4/15/98 12	:21	22.32		0.21
	4/15/98 14:25	•	13.161	-26.3835				4/15/98 12	:25	22.299		0.01
	4/15/98 14:29		11.5	-27.348				4/15/98 12		22.299		0
	4/15/98 14:33	9	9.7523	-27.8275				4/15/98 12:		22.278		.065
4	4/15/98 14:37	-	7.8843	-27.831				4/15/98 12:	:37	22.297		0.23
4	4/15/98 14:41		5.0304	-28.0332				4/15/98 12:	:41	22.299		0.13
4	4/15/98 14:45		4.1868	-28.128				4/15/98 12:		22.291		0
4	4/15/98 14:49		2.3181	-28.227				 4/15/98 12:		22.251	0	.085
4	4/15/98 14:53		42377	-28.2114				4/15/98 12:	:53	22.273		0.06
4	4/15/98 14:57		1.4388	-25.5465				4/15/98 12:		22.291		0.06
4	4/15/98 15:01		3.3273	-26.221				4/15/98 13:	:01	22.268		195
4	4/15/98 15:05	-{	5.2185	-27.6025				4/15/98 13:	:05	22.285		-0.1
4	4/15/98 15:09		5.5481	-30.9845				4/15/98 13:	:09	22.303		.065
4	4/15/98 15:13	-8	3.5715	-30.5875				4/15/98 13:	13	22.307	-0.	.085
4	4/15/98 15:17	-1	10.739	<b>-</b> 29.56				4/15/98 13:	:17	22.265		0.13
4	4/15/98 15:21	_1	12.745	-29.04				4/15/98 13:	21	22.29		0.29
4	4/15/98 15:25		14.689	<i>-</i> 27.52				4/15/98 13:	25	22.29		2.04
4	4/15/98 15:29		16.651	-24.295				4/15/98 13:	29	22.291		4.73
4	4/15/98 15:33	-1	18.553	<b>-22.84</b>				4/15/98 13:	33	22.232	-5.	645
4	4/15/98 15:37		20.193	-20.71				4/15/98 13:	37	21.882		-4.4
4	1/15/98 15:41		-21.51	-17.91				 4/15/98 13:	41.	21,345		1.39
4	1/15/98 15:45	-2	23.121	-24.03				4/15/98 13:	45	21.103		0.11
4	1/15/98 15:49	-2	24.335	-22.62				4/15/98 13:	49	21.002	-4.	635
4	1/15/98 15:53	-2	25.092	-21.14				4/15/98 13:	53	21.067	-13	3.03
4	1/15/98 15:57		27.927	-8.825				4/15/98 13:	57	21.125		1.94
4	1/15/98 16:01	-2	28.859	-3.775				4/15/98 14:	01	20.075	-26.	035
4	1/15/98 16:05		-29.32	-1.53				4/15/98 14:	05	18.461	-22.	
4	1/15/98 16:09		29.692	0.575				4/15/98 14:		16.737		3.27
	1/15/98 16:13		29.614	0.075				4/15/98 14:		14.868		0.76
	1/15/98 16:17		29.626	0.09				4/15/98 14:		13.91	-25.0	
	1/15/98 16:21		29.577	-0.08				4/15/98 14:		12.083	-25.	
	1/15/98 16:25		29.599	-0.255				4/15/98 14:		10.716	-28.	
	1/15/98 16:29		29.608	-0.225				4/15/98 14:		8.8961	-28.2	
									•			

4/15/98 16:33	-29.593	-0.2	4/15/98 14:33	6.9882	-28.2195
4/15/98 16:37	-29.65	0.045	4/15/98 14:37	5.087	-27.7899
4/15/98 16:41	-29.653	0.02	4/15/98 14:41	3.2432	-27.9935
4/15/98 16:45	-29.633	-0.215	4/15/98 14:45	1.3443	-28.2025
4/15/98 16:49	-29.641	-0.12	4/15/98 14:49	-0.47097	-29.0747
4/15/98 16:53	-29.649	-0.145	4/15/98 14:53	-2.3555	-28.6175
4/15/98 16:57	-29.676	-0.075	4/15/98 14:57	-4.2962	-28.399
4/15/98 17:01	-29.665	-0.1	4/15/98 15:01	-6.2859	-27.9755
4/15/98 17:05	-29.678	-0.025	<i>4</i> /15/98 15:05	-8.079	-28.69
4/15/98 17:09	-29.691	-0.07	4/15/98 15:09	<b>-</b> 9.976	-29.315
4/15/98 17:13	<b>-</b> 29.685	-0.3	4/15/98 15:13	-11.881	-29.24
4/15/98 17:17	-29.683	-0.155	4/15/98 15:17	-13.817	-28.755
4/15/98 17:21	-29.705	0.07	4/15/98 15:21	-15.839	-28.455
4/15/98 17:25	<i>-</i> 29.745	0.39	4/15/98 15:25	-17.729	-28.65
4/15/98 17:29	-29.714	0.265	4/15/98 15:29	-19.568	-29.22
4/15/98 17:33	-29.691	0.08	4/15/98 15:33	-21.53	-23.59
4/15/98 17:37	-29.667	0.01	4/15/98 15:37	<b>-23.459</b>	-22.63
4/15/98 17:41	-29.661	-0.065	4/15/98 15:41	<i>-</i> 25.412	-19.025
4/15/98 17:45	-29.675	0.055	4/15/98 15:45	-26.248	-16.94
4/15/98 17:49	-29.665	-0.23	4/15/98 15:49	<i>-</i> 27.985	-9.175
4/15/98 17:53	-29.674	-0.01	4/15/98 15:53	<i>-</i> 29.217	-3.45
4/15/98 17:57	-29.664	-0.025	4/15/98 15:57	-29.636	-2.395
4/15/98 18:01	-29.711	0.035	4/15/98 16:01	<b>-</b> 29.82	-0.965
4/15/98 18:05	-29.676	0.01	4/15/98 16:05	-29.907	-0.47
4/15/98 18:09	-29.669	-0.09	4/15/98 16:09	-30.115	0.46
4/15/98 18:13	-29.704	-0.02	4/15/98 16:13	<i>-</i> 30.013	0.43
4/15/98 18:17	-29.674	-0.17	4/15/98 16:17	-30.001	0.325
4/15/98 18:21	-29.687	0.03	4/15/98 16:21	-30.023	0.51
4/15/98 18:25	-29.708	0.15	4/15/98 16:25	-29.927	0.095
4/15/98 18:29	-29.708	-1.105	4/15/98 16:29	<b>-</b> 29.936	0.125
4/15/98 18:33	-29.681	-0.385	4/15/98 16:33	-29.921	0.035
4/15/98 18:37	-29.678	-0.09	4/15/98 16:37	<b>-</b> 29.908	-0.07
4/15/98 18:41	-29.929	1.475	4/15/98 16:41	-29.911	-0.095
4/15/98 18:45	-29.758	0.715	4/15/98 16:45	<i>-</i> 29.914	-0.22
4/15/98 18:49	-29.696	0.41	4/15/98 16:49	<b>-</b> 29.922	0.23
4/15/98 18:53	-29.634	0.12	4/15/98 16:53	-29.93	0.085
4/15/98 18:57	-29.615	-0.05	4/15/98 16:57	<b>-</b> 29.958	0.165
4/15/98 19:01	-29.614	0.345	4/15/98 17:01	<b>-</b> 29.876	-0.335
4/15/98 19:05	-29.61	0.035	4/15/98 17:05	<i>-</i> 29.913	-0.025
4/15/98 19:09	-29.625	0.295	4/15/98 17:09	<b>-</b> 29.925	0.045
4/15/98 19:13	-29.545	-0.18	4/15/98 17:13	-29.943	-0.185
4/15/98 19:17	-29.603	0.175	4/15/98 17:17	<i>-</i> 29.918	-0.035
4/15/98 19:21	-29.566	-0.08	4/15/98 17:21	-29.916	-0.165
4/15/98 19:25	-29.581	-0.08	4/15/98 17:25	-29.98	0.395
4/15/98 19:29	-29.568	-0.24	4/15/98 17:29	<i>-</i> 29.925	-0.09
4/15/98 19:33	-29.582	-0.265	4/15/98 17:33	-29.949	0.08
4/15/98 19:37	-29.597	-0.19	4/15/98 17:37	-29.901	-0.11
4/15/98 19:41	<del>-</del> 29.616	-0.8	4/15/98 17:41	-29.943	-0.065
4/15/98 19:45	-29.635	-0.14	4/15/98 17:45	-29.933	0.055

4/15/98 19:49	-29.635	-0.065		4/15/98 17:49	-29.923	-0.23
4/15/98 19:53	-29.776	0.615		4/15/98 17:53	-29.956	-0.005
4/15/98 19:57	-29.663	6.14		4/15/98 17:57	-29.922	-0.14
4/15/98 20:01	-29.648	15.28		4/15/98 18:01	-29.969	0.035
4/15/98 20:05	-29.653	24.5		4/15/98 18:05	-29.957	-0.11
4/15/98 20:09	-28.435	27.905		4/15/98 18:09	-29.95	-0.09
4/15/98 20:13	-26.592	28.05		4/15/98 18:13	-29.962	-0.02
4/15/98 20:17	-24.753	28.42		4/15/98 18:17	<b>-</b> 29.979	-0.05
4/15/98 20:21	-22.854	28.2		4/15/98 18:21	-29.968	0.025
4/15/98 20:25	-20.982	28.545		4/15/98 18:25	-29.966	-0.205
4/15/98 20:29	-19.069	28.28	•	4/15/98 18:29	-29.989	-1.345
4/15/98 20:33	-17.214	28.4		4/15/98 18:33	-29.963	-0.735
4/15/98 20:37	-15.273	28.0035	•	4/15/98 18:37	-30.007	-0.325
4/15/98 20:41	-13.413	28.1945		4/15/98 18:41	-30.258	1.245
4/15/98 20:45	-11.534	28.241		4/15/98 18:45	-30.11	0.715
4/15/98 20:49	-9.6723	28.319		4/15/98 18:49	-30.072	0.645
4/15/98 20:53	-7.7741	28.2065		4/15/98 18:53	-30.009	0.235
4/15/98 20:57	-5.8858	28.20915		4/15/98 18:57	-29.967	-0.165
4/15/98 21:01	-4.0085	28.3125		4/15/98 19:01	-29.943	-0.24
4/15/98 21:05	-2.1328	28.3815		4/15/98 19:05	-29.962	0.27
4/15/98 21:09	-0.24397	28.47085		4/15/98 19:09	-30	0.295
4/15/98 21:13	1.654	28.366		4/15/98 19:13	-29.991	-0.06
4/15/98 21:17	3.5435	28.3905		4/15/98 19:17	-29.908	0.06
4/15/98 21:21	5.4502	28.374	# -Su	4/15/98 19:21	-29.941	0.035
4/15/98 21:25	7.3272	28.489		4/15/98 19:25	-30.003	0.27
4/15/98 21:29	9.2216	28.372		4/15/98 19:29	-29.896	-0.125
4/15/98 21:33	11.125	28.4		4/15/98 19:33	-29.934	-0.03
4/15/98 21:37	13.025	28.385		4/15/98 19:37	-29.949	0.045
4/15/98 21:41	14.896	28.48	•	4/15/98 19:41	-29.921	-0.8
4/15/98 21:45	16.805	27.705		4/15/98 19:45	-29.94	-0.495
4/15/98 21:49	18.702	22.265		4/15/98 19:49	-29.94	0.05
4/15/98 21:53	20.592	13.46		4/15/98 19:53	-30.081	0.85
4/15/98 21:57	22.346	5.755		4/15/98 19:57	-30.039	7.435
4/15/98 22:01	23.155	1.835		4/15/98 20:01	-29.93	16.225
4/15/98 22:05	23.284	-1.815		4/15/98 20:05	-29.911	25.67
4/15/98 22:09	23.497	-3.4		4/15/98 20:09	-28.552	28.145
4/15/98 22:13	23.522	-3.94		4/15/98 20:13	-26.685	28.17
4/15/98 22:17	22.921	-0.99		4/15/98 20:17	-24.777	28.315
4/15/98 22:21	22.817	-0.56	• • •	4/15/98 20:21	-22.923	28.545
4/15/98 22:25	22.734	-0.145		4/15/98 20:25	-21.051	28.665
4/15/98 22:29	22.723	2.77		4/15/98 20:29	-19.114	28.055
4/15/98 22:33	22.705	10.105		4/15/98 20:33	-17.214	28.175
4/15/98 22:37	22.705	18.38		4/15/98 20:37	-15.318	28.2285
4/15/98 22:41	23.277	24.695		4/15/98 20:41	-13.503	28.6445
4/15/98 22:45	24.726	26.505		4/15/98 20:45	-11.579	28.466
4/15/98 22:49	26.381	27.545		4/15/98 20:49	-9.6723	28.4295
4/15/98 22:53	28.216	27.625		4/15/98 20:53	-7.7741	28.5355
4/15/98 22:57	30.027	28.015		4/15/98 20:57	-5.8858	28.64605
4/15/98 23:01	31.89	28.095		4/15/98 21:01	-3.9864	28.528
	51.03	20.030		H 10100 E 1.01	3.0001	

4/15/98 23:05	33.741	28.3		4/15/98 21:05	<i>-</i> 2.067	28.5935
4/15/98 23:09	35.63	28.305		4/15/98 21:09	-0.15659	28.46495
4/15/98 23:13	37.509	28.39		4/15/98 21:13	1.7192	28.4695
4/15/98 23:17	39.401	28.3		4/15/98 21:17	3.6517	28.491
4/15/98 23:21	41.291	28.27		4/15/98 21:21	5.5364	28.583
4/15/98 23:25	43.187	28.3		4/15/98 21:25	7.4131	28.5895
4/15/98 23:29	45.061	28.375		4/15/98 21:29	9.3499	28.4705
4/15/98 23:33	46.945	28.35		4/15/98 21:33	11.253	28.495
4/15/98 23:37	48.847	28.03		4/15/98 21:37	13.131	28.485
4/15/98 23:41	50.736	27.445		4/15/98 21:41	15.044	28.68
4/15/98 23:45	52.615	26.425	•	4/15/98 21:45	16.952	27.175
4/15/98 23:49	54.453	22.975	•	4/15/98 21:49	18.828	19.455
4/15/98 23:53	56.225	17.045	•	4/15/98 21:53	20.78	10.965
4/15/98 23:57	57.9	10.19		4/15/98 21:57	22.387	3.475
4/16/98 0:01	59.048	5.205		4/15/98 22:01	22.719	2.15
4/16/98 0:05	59.634	2.66		4/15/98 22:05	22.973	1.09
4/16/98 0:09	59.938	1.33		4/15/98 22:09	23.082	0.545
4/16/98 0:13	60.089	0.705		4/15/98 22:13	23.149	0.21
4/16/98 0:17	60.166	0.355		4/15/98 22:17	23.191	0.15
4/16/98 0:21	60.204	0.26		4/15/98 22:21	23.191	-0.04
4/16/98 0:25	60.23	0.225		4/15/98 22:25	23.191	0.27
4/16/98 0:29	60.237	0.27		4/15/98 22:29	23.221	4.325
4/16/98 0:33	60.256	0.06		4/15/98 22:33	23.183	12.055
4/16/98 0:37	60.275	0.165		4/15/98 22:37	23.245	20.42
4/16/98 0:41	60.291	-0.035		4/15/98 22:41	24.086	25.37
4/16/98 0:45	60.268	0.07		4/15/98 22:45	25.594	27.175
4/16/98 0:49	60.308	-0.11		4/15/98 22:49	27.329	27.895
4/16/98 0:53	60.284	-0.17		4/15/98 22:53	29.16	28.185
4/16/98 0:57	60.282	-0.135	•	4/15/98 22:57	31.029	28.265
4/16/98 1:01	60.286	0.06		4/15/98 23:01	32.908	28.345
4/16/98 1:05	60.25	0.25		4/15/98 23:05	34.797	28.335
4/16/98 1:09	60.255	0.11		4/15/98 23:09	36.682	28.54
4/16/98 1:13	60.298	-0.125		4/15/98 23:13	38.577	28.53
4/16/98 1:17	60.3	-0.155		4/15/98 23:17	40.464	28.645
4/16/98 1:21	60.277	0.055		4/15/98 23:21	42.39	28.41
4/16/98 1:25	60.273	-0.005		4/15/98 23:25	44.283	28.435
4/16/98 1:29	60.269	0.015		4/15/98 23:29	46.193	28.51
4/16/98 1:33	60.288	0.11		4/15/98 23:33	48.072	28.685
4/16/98 1:37	60.272	0.115	. •	4/15/98 23:37	49.97	28.85
4/16/98 1:41	60.272	0.015		4/15/98 23:41	51.895	26.8
4/16/98 1:45	60.31	-0.19		4/15/98 23:45	53.809	24.82
4/16/98 1:49	60.295	-0.02		4/15/98 23:49	55.74	18.38
4/16/98 1:53	60.275	-0.06		4/15/98 23:53	57.255	12.375
4/16/98 1:57	60.272	-0.04		4/15/98 23:57	58.773	5.345
4/16/98 2:01	60.291	-0.205		4/16/98 0:01	59.416	2.495
4/16/98 2:05	60.263	0.03		4/16/98 0:05	59.73	1.02
4/16/98 2:09	60.264	0.125		4/16/98 0:09	59.842	0.65
4/16/98 2:13	60.25	0.18		4/16/98 0:13	59.915	0.32
4/16/98 2:17	60.269	0.085		4/16/98 0:17	59.934	0.26
					•	

4/16/98 2:21	60.289	-0.09		4/16/98 0:21	59.972	0.07
4/16/98 2:25	60.286	0.02	t e e	4/16/98 0:25	59.979	0.035
4/16/98 2:29	60.286	0.02		4/16/98 0:29	59.986	-0.02
4/16/98 2:33	60.271	0.22		4/16/98 0:33	59.986	0.155
4/16/98 2:37	60.29	-0.095		4/16/98 0:37	59.986	0.16
4/16/98 2:41	60.29	-0.1		4/16/98 0:41	59.982	0.06
4/16/98 2:45	60.315	-0.13	et i €	4/16/98 0:45	60.017	-0.03
4/16/98 2:49	60.271	0.105		4/16/98 0:49	60.018	0.08
4/16/98 2:53	60.27	0.205		4/16/98 0:53	59.994	0.025
4/16/98 2:57	60.289	0.13		4/16/98 0:57	60.011	-0.035
4/16/98 3:01	60.292	-0.01	•	4/16/98 1:01	60.034	-0.13
4/16/98 3:05	60.311	-0.1		4/16/98 1:05	59.999	-0.04
4/16/98 3:09	60.315	-0.255		4/16/98 1:09	60.004	0.11
4/16/98 3:13	60.29	-0.12		4/16/98 1:13	60.008	-0.03
4/16/98 3:17	60.291	-0.215		4/16/98 1:17	59.991	0.135
4/16/98 3:21	60.264	0.12		4/16/98 1:21	60.026	-0.14
4/16/98 3:25	60.266	0.29		4/16/98 1:25	60.002	0
4/16/98 3:29	60.248	0.265		4/16/98 1:29	60.018	0.015
4/16/98 3:33	60.288	-0.02		4/16/98 1:33	<b>59.9</b> 98	0.015
4/16/98 3:37	60.324	-0.085		4/16/98 1:37	60.002	0.11
4/16/98 3:41	60.301	-0.095		4/16/98 1:41	60.021	-0.08
4/16/98 3:45	60.284	-0.015		4/16/98 1:45	60.001	0
4/16/98 3:49	60.307	-0.06		4/16/98 1:49	60.024	-0.115
4/16/98 3:53	60.282	-0.05	e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de	4/16/98 1:53	60.005	-0.06
4/16/98 3:57	60.281	0.055		4/16/98 1:57	60.001	0.06
4/16/98 4:01	60.295	-0.08		4/16/98 2:01	60.001	-0.015
4/16/98 4:05	60.272	-5.495		4/16/98 2:05	59.993	0.03
4/16/98 4:09	60.292	-14.64		4/16/98 2:09	60.013	-0.07
4/16/98 4:13	60.279	-24.015		4/16/98 2:13	59.998	0.09
4/16/98 4:17	59.173	<i>-</i> 27.96		4/16/98 2:17	59.999	0.085
4/16/98 4:21	57.364	-28.62		4/16/98 2:21	59.999	0.005
4/16/98 4:25	55.476	-28.75		4/16/98 2:25	60.016	-0.08
4/16/98 4:29	53.581	-29.025		4/16/98 2:29	60.016	-0.175
4/16/98 4:33	51.64	-28.89		4/16/98 2:33	60	0.03
4/16/98 4:37	49.726	-28.82		4/16/98 2:37	60	0.005
4/16/98 4:41	47.776	-28.605		4/16/98 2:41	59.981	0.095
4/16/98 4:45	45.862	-28.505		4/16/98 2:45	60.006	-0.13
4/16/98 4:49	43.962	-28.49		4/16/98 2:49	60.001	0.105
4/16/98 4:53	42.055	-28.54		4/16/98 2:53	60	0.01
4/16/98 4:57	40.161	-28.685		4/16/98 2:57	59.98	0.125
4/16/98 5:01	38.264	-28.755		4/16/98 3:01	60.022	-0.205
4/16/98 5:05	36.347	-28.76		4/16/98 3:05	60.002	-0.005
4/16/98 5:09	34.424	-28.69		4/16/98 3:09	60.005	-0.055
4/16/98 5:13	32.513	-28.735		4/16/98 3:13	59.981	0.075
4/16/98 5:17	30.595	-28.655		4/16/98 3:17	60.001	-0.02
4/16/98 5:21	28.686	-28.755		4/16/98 3:21	59.994	0.02
4/16/98 5:25	26.766	-28.71		4/16/98 3:25	59.996	-0.005
4/16/98 5:29	24.864	-28.835		4/16/98 3:29	59.997	-0.025
4/16/98 5:33	22.935	-28.67		4/16/98 3:33	59.998	-0.02
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4/16/98 5:37	21.024	-28.635		4/16/98 3:37	59.995	0.11
4/16/98 5:41	19.097	-28.58		4/16/98 3:41	59.992	0
4/16/98 5:45	17.201	-28.615		4/16/98 3:45	59.994	0.08
4/16/98 5:49	15.297	<b>-28.639</b>		4/16/98 3:49	60.017	-0.25
4/16/98 5:53	13.381	-28.6245		4/16/98 3:53	59.992	0.045
4/16/98 5:57	11.478			4/16/98 3:57	60.01	-0.04
4/16/98 6:01	9.5692	-28.6665		4/16/98 4:01	59.967	0.305
4/16/98 6:05	7.6561	-28.5675		4/16/98 4:05	60.001	-4.43
4/16/98 6:09	5.7521	-28.5081		4/16/98 4:09	60.002	-13.285
4/16/98 6:13	3.8359	-28.5525		4/16/98 4:13	60.028	-23.15
4/16/98 6:17	1.9426	-28.6425	•	4/16/98 4:17	59.115	-28.55
4/16/98 6:21	0.050474	-28.6004		4/16/98 4:21	57.345	-29.41
4/16/98 6:25	-1.8746	-28.538		4/16/98 4:25	55.398	-29.345
4/16/98 6:29	-3.7859	-28.5515		4/16/98 4:29	53.405	-28.84
4/16/98 6:33	-5.6696	-28.632		4/16/98 4:33	51.463	-28.6
4/16/98 6:37	-7.5822	-28.499		4/16/98 4:37	49.529	-28.435
4/16/98 6:41	-9.4962	-28.469		4/16/98 4:41	47.637	-28.51
4/16/98 6:45	-11.396	-28.69		4/16/98 4:45	45.743	-28.715
4/16/98 6:49	-13.282	-28.7		4/16/98 4:49	43.842	-28.695
4/16/98 6:53	-15.19	-28.74		4/16/98 4:53	41.935	-28.85
4/16/98 6:57	-17.134	-28.785		4/16/98 4:57	40	-28.595
4/16/98 7:01	-19.022	-28.7		4/16/98 5:01	38.103	-28.765
4/16/98 7:05	-20.938	-28.675		4/16/98 5:05	36.165	-28.465
4/16/98 7:09	-22.891	-19.175		4/16/98 5:09	34.281	-28.59
4/16/98 7:13	-24.762	-21.74		4/16/98 5:13	32.35	-28.64
4/16/98 7:17	-26.673	-16.295		4/16/98 5:17	30.472	-28.765
4/16/98 7:21	<b>-</b> 26.726	-18.035		4/16/98 5:21	28.563	-28.76
4/16/98 7:25	-29.11	-7.015		4/16/98 5:25	26.622	-28.615
4/16/98 7:29	-29.932	-3.39		4/16/98 5:29	24.719	-28.635
4/16/98 7:33	-30.333	-1.69		4/16/98 5:33	22.811	-28.785
4/16/98 7:37	-30.513	-0.82		4/16/98 5:37	20.899	-28.75
4/16/98 7:41	-30.61	-0.56		4/16/98 5:41	18.992	-28.69
4/16/98 7:45	-30.671	-0.01		4/16/98 5:45	17.054	-28.625
4/16/98 7:49	-30.677	1.54		4/16/98 5:49	15.149	-28.54
4/16/98 7:53	-30.722	3.28		4/16/98 5:53	13.254	-28.9555
4/16/98 7:57	-30.673	2.575		4/16/98 5:57	11.329	-28.962
4/16/98 8:01	-30.369	-0.325		4/16/98 6:01	9.441	-29.108
4/16/98 8:05	-30.066	-2.45	· ·	4/16/98 6:05	7.4629	-28.6885
4/16/98 8:09	-30.158	-2.32		4/16/98 6:09	5.5366	-28.741
4/16/98 8:13	-30.434	-0.85		4/16/98 6:13	3.6194	-28.457
4/16/98 8:17	-30.556	-0.27		4/16/98 6:17	1.7252	-28.7675
4/16/98 8:21	-30.622	0.095		4/16/98 6:21	-0.2116	-28.618
4/16/98 8:25	-30.604	-0.22		4/16/98 6:25	-2.072	-28.996
4/16/98 8:29	-30.61	-0.175		4/16/98 6:29	-4.0283	-28.791
4/16/98 8:33	-30.603	-0.06		4/16/98 6:33	-5.9352	-28.649
4/16/98 8:37	-30.648	0.34		4/16/98 6:37	-7.8712	-28.519
4/16/98 8:41	-30.645	0.36	•	4/16/98 6:41	-9.7865	-28.4875
4/16/98 8:45	-30.615	0.16		4/16/98 6:45	-11.665	-28.48
4/16/98 8:49	-30.58	-0.13		4/16/98 6:49	-13.575	-28.495
10.00 0.70	00.00			*		

4/16/98 8:53	-30.573	-0.18		4/16/98 6:53	-15.484	-28.535
4/16/98 8:57	-30.583	-0.185		4/16/98 6:57	-17.361	-28.8
4/16/98 9:01	-30.606	-0.1	•	4/16/98 7:01	-19.274	<i>-</i> 28.6
4/16/98 9:05	-30.609	-0.025		4/16/98 7:05	-21.191	-28.575
4/16/98 9:09	-30.62	-0.165		4/16/98 7:09	-23.121	-20.59
4/16/98 9:13	-30.626	-0.18		4/16/98 7:13	-24.994	-22.57
4/16/98 9:17	-30.614	-0.345		4/16/98 7:17	-26.906	-16.89
4/16/98 9:21	-30.653	-0.155		4/16/98 7:21	-27.239	-17.23
4/16/98 9:25	-30.662	0.1	•	4/16/98 7:25	-29.508	-6.67
4/16/98 9:29	-30.683	0.04		4/16/98 7:29	-30.284	-3.395
4/16/98 9:33	-30.684	0.115	•	4/16/98 7:33	-30.685	-1.46
4/16/98 9:37	-30.642	-0.02		4/16/98 7:37	-30.842	-0.59
4/16/98 9:41	-30.675	-0.02		4/16/98 7:41	-30.963	-0.09
4/16/98 9:45	-30.661	-0.11		4/16/98 7:45	-30.977	
4/16/98 9:49	-30.646	0.005		4/16/98 7:49	-30.96	2.25
4/16/98 9:53	-30.679	-0.325		4/16/98 7:53	-30.981	3.4
4/16/98 9:57	-30.683	0.005		4/16/98 7:57	-30.955	2.34
4/16/98 10:01	-30.645	-0.09		4/16/98 8:01	-30.51	-0.915
4/16/98 10:05	-30.744	0.385		4/16/98 8:05	-30.301	-2.565
4/16/98 10:09	-30.682	-1.155		4/16/98 8:09	-30.487	-1.965
4/16/98 10:13	-30.663	-0.355		4/16/98 8:13	-30.693	-1.085
4/16/98 10:17	-30.667	0.035		4/16/98 8:17	-30.814	-0.395
4/16/98 10:21	-30.007 -30.913	1.2		4/16/98 8:21	-30.88	-0.395 -0.265
4/16/98 10:25			and the second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second s	4/16/98 8:25	-30,88 -30.91	0.255
	-30.734	0.495				
4/16/98 10:29	-30.66	-0.145		4/16/98 8:29	-30.893	0.065
4/16/98 10:33	-30.673	0.3		4/16/98 8:33	-30.933	0.3
4/16/98 10:37	-30.635	0.15		4/16/98 8:37	-30.859	-0.25
4/16/98 10:41	-30.689	0.345		4/16/98 8:41	-30.88	-0.11
4/16/98 10:45	-30.613	0.005		4/16/98 8:45	-30.873	-0.2
4/16/98 10:49	-30.605	0.005		4/16/98 8:49	-30.909	0.105
4/16/98 10:53	-30.62	0.005		4/16/98 8:53	-30.902	0.055
4/16/98 10:57	-30.612	-0.025		4/16/98 8:57	-30.913	0.055
4/16/98 11:01	-30.604	-0.155		4/16/98 9:01	-30.888	0.015
4/16/98 11:05	-30.619	0.05		4/16/98 9:05	-30.891	-0.025
4/16/98 11:09	<b>-</b> 30.617	-0.09		4/16/98 9:09	<i>-</i> 30.902	-0.165
4/16/98 11:13	-30.635	-0.17		4/16/98 9:13	-30.885	-0.18
4/16/98 11:17	-30.609	-0.26	•	4/16/98 9:17	-30.896	-0.11
4/16/98 11:21	<b>-</b> 30.635	-0.085	• .	4/16/98 9:21	-30.935	-0.04
4/16/98 11:25	<b>-30.669</b>	-1.54		4/16/98 9:25	-30.921	-0.135
4/16/98 11:29	-30.661	2.435		4/16/98 9:29	-30.918	-0.08
4/16/98 11:33	-30.652	8.625		4/16/98 9:33	-30.943	0
4/16/98 11:37	-30.977	18.565		4/16/98 9:37	-30.948	-0.14
4/16/98 11:41	-30.174	23.57		4/16/98 9:41	-30.934	-0.02
4/16/98 11:45	-28.927	26.57		4/16/98 9:45	-30.943	-0.115
4/16/98 11:49	-27.264	29.675		4/16/98 9:49	-30.976	0.125
4/16/98 11:53	-25.46	28.32		4/16/98 9:53	-30.938	-0.325
4/16/98 11:57	-23.613	21.015		4/16/98 9:57	-30.966	0.01
4/16/98 12:01	-21.329	11.525		4/16/98 10:01	-30.951	-0.09
4/16/98 12:05	-19.796	10.35		4/16/98 10:05	-31.003	-0.085
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4/16/98 12:09	-19.41	16.365		4/16/98 10:09	-30.964	-0.57
4/16/98 12:13	-19.024	23.385		4/16/98 10:13	-30.969	
4/16/98 12:17	-17.726	26.505		4/16/98 10:17	-31.02	0.385
4/16/98 12:21	-16.137	29.89		4/16/98 10:21	-31.078	0.73
4/16/98 12:25	-14.347	24.332		4/16/98 10:25	-30.945	0.37
4/16/98 12:29	-12.425	16.401		4/16/98 10:29	-30.943	0.21
4/16/98 12:33	-10.159	5.7465		4/16/98 10:33	-30.932	0.18
4/16/98 12:37	-9.4806	2.363		4/16/98 10:37	-30.871	-0.2
4/16/98 12:41	-9.1448	0.7215		4/16/98 10:41	-30.901	-0.005
4/16/98 12:45	-9.0097	0.8085		4/16/98 10:45	-30.896	0.125
4/16/98 12:49	-9.008	6.593	• ,	4/16/98 10:49	-30.911	0.12
4/16/98 12:53	-9.0005	14.308		4/16/98 10:53	-30.902	-0.115
4/16/98 12:57	-8.848	22.1745	•	4/16/98 10:57	-30.871	-0.26
4/16/98 13:01	-7.6894	25.4165		4/16/98 11:01	-30.887	-0.385
4/16/98 13:05	-6.1389	29.04645		4/16/98 11:05	-30.925	0.05
4/16/98 13:09	-4.4131	25.25025		4/16/98 11:09	-30.923	-0.205
4/16/98 13:13	-2.6061	20.8205		4/16/98 11:13	-30.964	-0.055
4/16/98 13:17	-0.32961	17.83055		4/16/98 11:17	-30.915	-0.14
4/16/98 13:21	0.63695	21.79025		4/16/98 11:21	-30.964	-0.085
4/16/98 13:25	1.558	26.051		4/16/98 11:25	-30.975	-0.95
4/16/98 13:29	3.2365	28.463		4/16/98 11:29	-30.943	1.97
4/16/98 13:33	4.995	28.54		4/16/98 11:33	-30.981	9.22
4/16/98 13:37	6.7682	20.319		4/16/98 11:37	-31.165	18.69
4/16/98 13:41	8.9291	11.1495		4/16/98 11:41	-30.549	24.75
4/16/98 13:45	10.703	7.6		4/16/98 11:45	-29.137	27.04
4/16/98 13:49	10.832	14.575		4/16/98 11:49	-27.427	30.03
4/16/98 13:53	11.159	21.595		4/16/98 11:53	-25.599	26.61
4/16/98 13:57	12.223	25.205		4/16/98 11:57	-23.729	19.08
4/16/98 14:01	13.747	27.02		4/16/98 12:01	-21.421	10.045
4/16/98 14:05	15.478	27.655		4/16/98 12:05	-20.277	11.615
4/16/98 14:09	17.264	24.36		4/16/98 12:09	-19.913	18.31
4/16/98 14:13	19.151	15.255		4/16/98 12:13	-19.412	24.985
4/16/98 14:17	21.009	7.205		4/16/98 12:17	-17.954	28.205
4/16/98 14:21	22.136	2.165		4/16/98 12:21	-16.251	30.125
4/16/98 14:25	22.202	2.66		4/16/98 12:25	-14.415	22.662
4/16/98 14:29	22.45	7.035		4/16/98 12:29	-12.313	13.4975
4/16/98 14:33	22.569			4/16/98 12:33	-10.226	
4/16/98 14:37	22.734	22.56		4/16/98 12:37	-9.8826	1.919
4/16/98 14:41	23.857	26.085		4/16/98 12:41	-9.6135	0.834
4/16/98 14:45	25.462	27.35		4/16/98 12:45	-9.5228	2.0365
4/16/98 14:49	27.246	27.87		4/16/98 12:49	-9.4988	8.6025
4/16/98 14:53	27.2 <del>4</del> 0 29.074	28.05		4/16/98 12:53	-9.4467	16.4285
4/16/98 14:57		28.23		4/16/98 12:57	-9.1155	23.733
4/16/98 15:01	30.932	28.16		4/16/98 13:01	-7.7783	26.7395
	32.82			4/16/98 13:05	-7.7763 -6.161	28.61055
4/16/98 15:05 4/16/98 15:09	34.684 26.579	28.275		4/16/98 13:09	-4.3689	23.3934
_	36.578	28.225		4/16/98 13:13	-2.4304	21.5735
4/16/98 15:13	38.452	28.325		4/16/98 13:17	-0.43889	20.32695
4/16/98 15:17	40.339	28.345		4/16/98 13:17	0.30978	25.6921
4/16/98 15:21	42.223	28.4		4/10/80 13.21	0.30870	23.0321

4/16/98 15:25	44.117	28.27		4/16/98 13:25	1.8843	27.213
4/16/98 15:29	46.008	28.125		4/16/98 13:29	3.6265	29.507
4/16/98 15:33	47.903	28.07		4/16/98 13:33	5.4482	24.459
4/16/98 15:37	49.771	28.185		4/16/98 13:37	7.3269	16.3555
4/16/98 15:41	51.633	26.745		4/16/98 13:41		6.6605
4/16/98 15:45	53.517	25.35		4/16/98 13:45	10.34	8.99
4/16/98 15:49	55.408	19.915		4/16/98 13:49	10.598	15.955
4/16/98 15:53	56.982	14.03		4/16/98 13:53	10.86	23.51
4/16/98 15:57	58.587	7.235		4/16/98 13:57	12.138	26.155
4/16/98 16:01	59.391	3.655		4/16/98 14:01	13.789	27.645
4/16/98 16:05	59.788	2.03	•	4/16/98 14:05	15.562	27.755
4/16/98 16:09	60.034	1.065		4/16/98 14:09	17.369	21.34
4/16/98 16:13	60.122	0.68	•	4/16/98 14:13	19.318	12.96
4/16/98 16:17	60.194	0.37		4/16/98 14:17	21.113	4.29
4/16/98 16:21	60.247	0.065		4/16/98 14:21	21.637	1.75
4/16/98 16:25	60.258	0.14		4/16/98 14:25	21.91	2.46
4/16/98 16:29	60.268	0.11		4/16/98 14:29	21.971	9.325
4/16/98 16:33	60.26	0.15		4/16/98 14:33	21.987	17.685
4/16/98 16:37	60.286	0.1		4/16/98 14:37	22.402	24.63
4/16/98 16:41	60.29	-0.035		4/16/98 14:41	23.836	26.905
4/16/98 16:45	60.29	0.14		4/16/98 14:45	25.524	27.755
4/16/98 16:49	60.306	-0.135		4/16/98 14:49	27.328	28.275
4/16/98 16:53	60.283	0.06	· · · · · · · · · · · · · · · · · · ·	4/16/98 14:53	29.217	28.25
4/16/98 16:57	60.318	-0.02		4/16/98 14:57	,	28.425
4/16/98 17:01	60.279	0.06		4/16/98 15:01	32.983	28.25
4/16/98 17:05	60.295	0.175		4/16/98 15:05	34.867	28.365
4/16/98 17:09	60.314	-0.035		4/16/98 15:09	36.76	28.415
4/16/98 17:13	60.291	0.08		4/16/98 15:13	38.633	28.615
4/16/98 17:17	60.33	-0.22		4/16/98 15:17	40.54	28.63
4/16/98 17:21	60.307	-0.1		4/16/98 15:21	42.443	28.68
4/16/98 17:25	60.307	0.1		4/16/98 15:25	44.356	28.555
4/16/98 17:29	60.286	-0.005		4/16/98 15:29	46.266	28.505
4/16/98 17:33	60.287	0.09		4/16/98 15:33	48.179	28.45
4/16/98 17:37	60.327	-0.1		4/16/98 15:37	50.067	28.75
4/16/98 17:41	60.285	0.085		4/16/98 15:41	51.967	26.73
4/16/98 17:45	60.305	0.195		4/16/98 15:45	53.869	24.755
4/16/98 17:49	60.307	0.05		4/16/98 15:49	55.817	17.87
4/16/98 17:53	60.302	0.15		4/16/98 15:53	57.313	11.895
4/16/98 17:57	60.344	-0.06		4/16/98 15:57	58.82	5.01
4/16/98 18:01	60.317	-0.025		4/16/98 16:01	59.391	2.205
4/16/98 18:05	60.332	-0.09		4/16/98 16:05	59.692	0.87
4/16/98 18:09	60.332	-0.04		4/16/98 16:09	59.822	0.195
4/16/98 18:13	60.312	-0.06		4/16/98 16:13	59.832	0.295
4/16/98 18:17	60.314	0.025		4/16/98 16:17	59.866	0.08
4/16/98 18:21	60.324	-0.125		4/16/98 16:21	59.861	0.16
4/16/98 18:25	60.3	0.07		4/16/98 16:25	59.891	0.045
4/16/98 18:29	60.319	0.055		4/16/98 16:29	59.882	0.01
4/16/98 18:33	60.299	0.135		4/16/98 16:33	59.893	-0.045
4/16/98 18:37	60.314	0.04		4/16/98 16:37	59.9	-0.195
	• •					

4/16/98 18:41	60.33	-0.075		4/16/98 16:41	59.884	-0.035 [^]
4/16/98 18:45	60.326	0.025		4/16/98 16:45	59.884	0.04
4/16/98 18:49	60.322	0.025		4/16/98 16:49	59.861	0.06
4/16/98 18:53	60.315	0.14		4/16/98 16:53	59.877	-0.035
4/16/98 18:57	60.331	-0.17		4/16/98 16:57	59.892	-0.015
4/16/98 19:01	60.327	-0.075		4/16/98 17:01	59.873	0.16
4/16/98 19:05	60.343	-0.195		4/16/98 17:05	59.87	0.075
4/16/98 19:09	60.297	0.14		4/16/98 17:09	59.889	-0.035
4/16/98 19:13	60.312	-0.03		4/16/98 17:13	59.905	-0.115
4/16/98 19:17	60.304	0.015	•	4/16/98 17:17	59.885	-0.025
4/16/98 19:21	60.325	0.015	•	4/16/98 17:21	59.882	-0.1
4/16/98 19:25	60.306	0.07		4/16/98 17:25	59.882	0.1
4/16/98 19:29	60.307	0.065		4/16/98 17:29	59.88	0
4/16/98 19:33	60.328	-0.065		4/16/98 17:33	59.862	0.185
4/16/98 19:37	60.32	-0.125		4/16/98 17:37	59.902	-0.005
4/16/98 19:41	60.32	-0.13		4/16/98 17:41	59.88	-0.015
4/16/98 19:45	60.315	0.02		4/16/98 17:45	59.899	-0.19
4/16/98 19:49	60.295	0.04		4/16/98 17:49	59.901	0.05
4/16/98 19:53	60.294	0.16		4/16/98 17:53	59.877	0.055
4/16/98 19:57	60.319	-0.125		4/16/98 17:57	59.861	0.135
4/16/98 20:01	60.303	-0.03		4/16/98 18:01	59.911	-0.02
4/16/98 20:05	60.326	-2.56		4/16/98 18:05	59.888	0.1
4/16/98 20:09	60.294	-10.85		4/16/98 18:09	59.888	0.055
4/16/98 20:13	60.297			4/16/98 18:13	59.907	-0.06
4/16/98 20:17	59.814	-27.435		4/16/98 18:17	59.908	-0.07
4/16/98 20:21	58.124	-28.8		4/16/98 18:21	59.899	-0.03
4/16/98 20:25	56.296	-29.395		4/16/98 18:25	59.895	0.07
4/16/98 20:29	54.327	-29.045		4/16/98 18:29	59.894	0.055
4/16/98 20:33	52.364	-28.62		4/16/98 18:33	59.893	-0.055
4/16/98 20:37	50.417	-28.43		4/16/98 18:37	59.909	0.035
4/16/98 20:41	48.518	-28.415		4/16/98 18:41	59.905	-0.075
4/16/98 20:45	46.64	-28.54		4/16/98 18:45	59.882	0.02
4/16/98 20:49	44.731	-28.585		4/16/98 18:49	59.916	-0.07
4/16/98 20:53	42.835	-28.605		4/16/98 18:53	59.89	0.04
4/16/98 20:57	40.932	-28.605		4/16/98 18:57	59.886	0.025
4/16/98 21:01	39.014	-28.6		4/16/98 19:01	59.902	-0.17
4/16/98 21:05	37.114	-28.655		4/16/98 19:05	59.898	-0.095
4/16/98 21:09	35.211	-28.605		4/16/98 19:09	59.891	0.14
4/16/98 21:13	33.294	-28.825	• • •	4/16/98 19:13	59.868	0.16
4/16/98 21:17	31.383	-28.815		4/16/98 19:17	59.879	0.015
4/16/98 21:21	29.49	-28.915		4/16/98 19:21	59.919	-0.18
4/16/98 21:25	27.529	-28.725		4/16/98 19:25	59.9	-0.025
4/16/98 21:29	25.62	-28.745		4/16/98 19:29	59.882	0.065
4/16/98 21:33	23.707	-28.755		4/16/98 19:33	59.883	0.13
4/16/98 21:37	21.784	-28.515		4/16/98 19:37	59.895	0.065
4/16/98 21:41	19.871	-28.615		4/16/98 19:41	59.895	-0.035
4/16/98 21:45	17.956	-28.535		4/16/98 19:45	59.909	0.025
4/16/98 21:49	16.081	-28.69		4/16/98 19:49	59.908	0.045
4/16/98 21:53	14.148	-28.598		4/16/98 19:53	59.888	-0.035

4/16/98 21:57	12.249	-28.589		4/16/98 19:57	59.914	-0.13
4/16/98 22:01	10.343	-28.6325	•	4/16/98 20:01	59.917	-0.225
4/16/98 22:05	8.4284	-28.6405		4/16/98 20:05	59.881	-3.53
4/16/98 22:09	6.5312	-28.6706		4/16/98 20:09	59.888	-12.31
4/16/98 22:13	4.6165	-28.676		4/16/98 20:13	59.872	-22.265
4/16/98 22:17	2.7003	-28.477		4/16/98 20:17	59.175	-29.025
4/16/98 22:21	0.79708	-28.7639		4/16/98 20:21	57.426	-30.015
4/16/98 22:25	-1.1187	-28.5555		4/16/98 20:25	55.419	-29.34
4/16/98 22:29	-2.9951	-28.5875		4/16/98 20:29	53.37	-28.505
4/16/98 22:33	-4.9557	-28.3765		4/16/98 20:33	51.423	-28.38
4/16/98 22:37	-6.8298	-28.641	•	4/16/98 20:37	49.551	-28.48
4/16/98 22:41	-8.7126	-28.792		4/16/98 20:41	47.669	-28.765
4/16/98 22:45	-10.631	-28.835		4/16/98 20:45	45.747	-28.585
4/16/98 22:49	-12.558	-28.675		4/16/98 20:49	43.855	-28.63
4/16/98 22:53	-14.471	-28.765		4/16/98 20:53	41.916	-28.555
4/16/98 22:57	-16.398	-28.69		4/16/98 20:57	40.03	-28.655
4/16/98 23:01	-18.293	-28.71		4/16/98 21:01	38.129	-28.75
4/16/98 23:05	-20.224	-28.59		4/16/98 21:05	36.205	-28.605
4/16/98 23:09	-22.136	-17.695		4/16/98 21:09	34.299	-28.655
4/16/98 23:13	-24.035	-20.975		4/16/98 21:13	32.379	-28.88
4/16/98 23:17	-25.942	-15.155		4/16/98 21:17	30.484	-28.865
4/16/98 23:21	-25.675	-18.465		4/16/98 21:21	28.568	-28.87
4/16/98 23:25	-28.23	-6.665		4/16/98 21:25	26.603	-28.575
4/16/98 23:29	-28.973	-3.315		4/16/98 21:29	24.711	-28.805
4/16/98 23:33	-29.368	-1.47	•	4/16/98 21:33		-28.705
4/16/98 23:37	-29.563	-0.505		4/16/98 21:37	20.888	-28.78
4/16/98 23:41	-29.636	-0.365		4/16/98 21:41	18.95	-28.565
4/16/98 23:45	-29.662	-0.24		4/16/98 21:45	17.053	-28.805
4/16/98 23:49	-29.664	-0.215		4/16/98 21:49	15.132	-28.537
4/16/98 23:53	-29.709	-0.09		4/16/98 21:53	13.237	-28.654
4/16/98 23:57	-29.71	0.065		4/16/98 21:57	11.292	-28.4345
4/17/98 0:01	-29.707	-0.05		4/16/98 22:01	9.4246	-28.7995
4/17/98 0:05	-29.727	0.09		4/16/98 22:05	7.5062	-28.918
4/17/98 0:09	-29.697	-0.02		4/16/98 22:09	5.6051	-28.8404
4/17/98 0:13	-29.717	0.115		4/16/98 22:13	3.6647	-28.958
4/17/98 0:17	-29.709	0.135		4/16/98 22:17	1.7226	-28.541
4/17/98 0:21	-29.701	0.255		4/16/98 22:21	-0.16298	-28.8281
4/17/98 0:25	-29.694	0.02		4/16/98 22:25	-2.1269	-28.512
4/17/98 0:29	-29.682	0.14		4/16/98 22:29	-3.9856	-28.878
4/17/98 0:33	-29.65	0.02		4/16/98 22:33	-5.9286	-28.102
4/17/98 0:37	<b>-</b> 29.69	0.045		4/16/98 22:37	-7.8293	-28.0335
4/17/98 0:41	-29.654	-0.315		4/16/98 22:41	-9.7612	-27.849
4/17/98 0:45	-29.646	-0.005		4/16/98 22:45	-11.549	-28.335
4/17/98 0:49	<b>-</b> 29.681	0.155		4/16/98 22:49	-13.436	-28.62
4/17/98 0:53	-29.717	0.133		4/16/98 22:53	-15.331	-28.59
4/17/98 0:57	-29.647	0.545		4/16/98 22:57	-17.216	-28.635
4/17/98 1:01	-29.65	0.07		4/16/98 23:01	-19.16	-28.425
4/17/98 1:05	-29.648	-0.12		4/16/98 23:05	-21.049	-25.515
4/17/98 1:09	-29.647	0.04		4/16/98 23:09	-22.943	-18.31
-#11700 1.03	-23.041	0.04		7/ 10/00 20.00	<u></u>	10.01

4/17/98 1:13	-29.636	-0.085	4/16/98 23:13	-24.845	<b>-2</b> 0.55
4/17/98 1:17	-29.672	0.045	4/16/98 23:17	-26.152	-16.565
4/17/98 1:21	-29.639	-0.22	4/16/98 23:21	-26.605	-15.34
4/17/98 1:25	-29.653	-0.07	4/16/98 23:25	-28.955	-4.215
4/17/98 1:29	-29.663	-0.175	4/16/98 23:29	-29.465	-1.915
4/17/98 1:33	-29.683	0.14	4/16/98 23:33	-29.673	-0.885
4/17/98 1:37	-29.667	-0.195	4/16/98 23:37	-29.798	-0.385
4/17/98 1:41	-29.698	-0.04	4/16/98 23:41	-29.848	-0.125
4/17/98 1:45	-29.655	-0.135	4/16/98 23:45	-29.85	-0.12
4/17/98 1:49	-29.706	0.12	4/16/98 23:49	-29.875	0.135
4/17/98 1:53	-29.706	0.025	4/16/98 23:53	-29.873	0.14
4/17/98 1:57	-29.682	-0.07	4/16/98 23:57	-29.874	0.065
4/17/98 2:01	-29.682	-0.05	4/17/98 0:01	-29.848	-0.165
4/17/98 2:05	-29.701	-0.05	4/17/98 0:05	-29.845	-0.14
4/17/98 2:09	-29.696	-0.075	4/17/98 0:09	-29.861	-0.025
4/17/98 2:13	-29.692	-0.095	4/17/98 0:13	-29.881	0.115
4/17/98 2:17	-29.711	0.14	4/17/98 0:17	-29.873	0.02
4/17/98 2:21	-29.711	-0.125	4/17/98 0:21	-29.866	0.14
4/17/98 2:25	-29.711	0.02	4/17/98 0:25	-29.858	0.02
4/17/98 2:29	-29.683	-0.23	4/17/98 0:29	-29.869	0.135
4/17/98 2:33	-29.736	0.135	4/17/98 0:33	-29.838	-0.095
4/17/98 2:37	-29.707	0.09	4/17/98 0:37	-29.854	-0.075
4/17/98 2:41	-29.729	0.18	4/17/98 0:41	-29.842	-0.315
4/17/98 2:45	-29.709	-0.06	4/17/98 0:45	-29.857	-0.12
4/17/98 2:49	-29.689	-0.06	4/17/98 0:49	-29.869	0.04
4/17/98 2:53	-29.693	-0.06	4/17/98 0:53	-29.905	0.23
4/17/98 2:57	-29.721	0.035	4/17/98 0:57	-29.881	0.47
4/17/98 3:01	-29.701	-0.105	4/17/98 1:01	-29.861	0.185
4/17/98 3:05	-29.705	-0.015	4/17/98 1:05	-29.859	0.235
4/17/98 3:09	<b>-</b> 29.714	-0.13	4/17/98 1:09	-29.787	-0.2
4/17/98 3:13	-29.722	0.24	4/17/98 1:13	-29.824	-0.085
4/17/98 3:17	-29.708	-0.085	4/17/98 1:17	-29.812	-0.31
4/17/98 3:21	-29.74	4.04	4/17/98 1:21	-29.827	-0.335
4/17/98 3:25	-29.674	12.955	4/17/98 1:25	-29.841	-0.065
4/17/98 3:29	-29.725	22.395	4/17/98 1:29	-29.874	0.06
4/17/98 3:33	-28.932	27.705	4/17/98 1:33	-29.894	0.14
4/17/98 3:37	-27.083	27.835	4/17/98 1:37		-0.2
4/17/98 3:41	-25.246	28.115	4/17/98 1:41	-29.862	-0.04
4/17/98 3:45	-23.391	28.395	4/17/98 1:45	-29.866	0.1
4/17/98 3:49	-21.516	28.445	4/17/98 1:49	-29.894	0.125
4/17/98 3:53	-19.623	28.44	4/17/98 1:53	<i>-</i> 29.87	0.025
4/17/98 3:57	-17.712	28.33	4/17/98 1:57	-29.846	-0.19
4/17/98 4:01	-15.827	28.615	4/17/98 2:01	-29.869	-0.055
4/17/98 4:05	-13.935	28.4035	4/17/98 2:05	-29.865	0.065
4/17/98 4:09	-12.046	28.3665	4/17/98 2:09	-29.884	0.045
4/17/98 4:13	-12.04 <del>0</del> -10.104	28.134	4/17/98 2:13	-29.88	0.025
4/17/98 4:17	-10.10 <del>4</del> -8.2543	28.3215	4/17/98 2:17	-29.852	-0.095
4/17/98 4:11	-6.3727	28.19295	4/17/98 2:21	-29.875	0.11
4/17/98 4:25	-0.3121 -4.4772	28.4045	4/17/98 2:25	-29.875	-0.095
7/1//30 4.20	-4.4112	20.4040	7/ (7/30 2.20	20.010	-0.000

4/17/98 4:29	<b>-2</b> .59	28.289		4/17/98 2:29	-29.871	0.005
4/17/98 4:33	-0.73411	28.50505	•	4/17/98 2:33	-29.853	0.135
4/17/98 4:37	1.2037	28.3175		4/17/98 2:37	-29.894	0.205
4/17/98 4:41	3.0678	28.531		4/17/98 2:41	<b>-2</b> 9.87	0.3
4/17/98 4:45	4.9669	28.4855	• a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a • a •	4/17/98 2:45	-29.826	-0.06
4/17/98 4:49	6.8672	28.449		4/17/98 2:49	-29.853	-0.18
4/17/98 4:53	8.774	28.335		4/17/98 2:53	-29.81	-0.18
4/17/98 4:57	10.664	28.355		4/17/98 2:57	-29.838	-0.085
4/17/98 5:01	12.557	28.22		4/17/98 3:01	-29.889	0.245
4/17/98 5:05	14.441	28.28		4/17/98 3:05	-29.846	-0.13
4/17/98 5:09	16.335	28.355	•	4/17/98 3:09	-29.855	-0.125
4/17/98 5:13	18.201	28.655		4/17/98 3:13	-29.84	0.01
4/17/98 5:17	20.097	28.56		4/17/98 3:17	-29.872	0.15
4/17/98 5:21	22.006	28.79		4/17/98 3:21	-29.88	4.505
4/17/98 5:25	23.932	28.595		4/17/98 3:25	-29.838	13.54
4/17/98 5:29	25.809	28.605		4/17/98 3:29	-29.842	22.865
4/17/98 5:33	27.764	28.31		4/17/98 3:33	-28.979	27.94
4/17/98 5:37	29.651	28.41		4/17/98 3:37	<i>-</i> 27.13	28.185
4/17/98 5:41	31.53	28.385		4/17/98 3:41	-25.269	28.345
4/17/98 5:45	33.426	28.355		4/17/98 3:45	-23.391	28.28
4/17/98 5:49	35.333	28.305		4/17/98 3:49	-21.493	28.105
4/17/98 5:53	37.207	28.48		4/17/98 3:53	-19.6	28.1
4/17/98 5:57	39.097	28.43	- Toronto	4/17/98 3:57	-17.735	28.22
4/17/98 6:01	40.994	28.425		4/17/98 4:01	-15.872	28.62
4/17/98 6:05	42.903	28.325		4/17/98 4:05	-13.98	28.6285
4/17/98 6:09	44.783	28.445		4/17/98 4:09	-12.091	28.7025
4/17/98 6:13	46.679	28.32		4/17/98 4:13	-10.148	28.4645
4/17/98 6:17	48.568	28.22		4/17/98 4:17	-8.2543	28.4315
4/17/98 6:21	50.472	28.02	•	4/17/98 4:21	-6.3505	28.1913
4/17/98 6:25	52.343	28.055		4/17/98 4:25	-4.4551	28.403
4/17/98 6:29	54.212	26.105		4/17/98 4:29	<b>-</b> 2.568	28.504
4/17/98 6:33	56.076	23.885		4/17/98 4:33	-0.71224	28.7197
4/17/98 6:37	57.954	16.11		4/17/98 4:37	1.2255	28.6385
4/17/98 6:41	59.433	6.2		4/17/98 4:41	3.1328	28.527
4/17/98 6:45	60.853	-1.865		4/17/98 4:45	5.0317	28.4815
4/17/98 6:49	61.176	-3.95		4/17/98 4:49	6.9532	28.334
4/17/98 6:53	60.673	-1.515		4/17/98 4:53	8.8382	28.334
4/17/98 6:57	60.48	-0.82	: ·	4/17/98 4:57	10.728	28.355
4/17/98 7:01	60.386	-0.31	*** *** ,	4/17/98 5:01	12.62	28.43
4/17/98 7:05	60.37	-0.34		4/17/98 5:05	14.505	28.48
4/17/98 7:09	60.316	-0.13		4/17/98 5:09	16.399	28.345
4/17/98 7:13	60.324	-0.29		4/17/98 5:13	18.306	28.44
4/17/98 7:17	60.302	-0.105		4/17/98 5:17	20.201	28.45
4/17/98 7:21	60.29	0.045		4/17/98 5:21	22.068	28.79
4/17/98 7:25	60.266	0.08		4/17/98 5:25	23.994	28.9
4/17/98 7:29	60.281	-0.005		4/17/98 5:29	25.891	28.705
4/17/98 7:33	60.299	-0.04		4/17/98 5:33	27.826	28.61
4/17/98 7:37	60.282	0.005		4/17/98 5:37	29.774	28.405
4/17/98 7:41	60.28	0.145	e ex	4/17/98 5:41	31.632	28.68
				•		

4/17/98 7:45	60.291	-0.065		•	4/17/98 5:45	33.548	28.65
4/17/98 7:49	60.283	0.16			4/17/98 5:49	35.455	28.595
4/17/98 7:53	60.309	0.005			4/17/98 5:53	37.368	28.375
4/17/98 7:57	60.278	0.14			4/17/98 5:57	39.278	28.32
4/17/98 8:01	60.315	0.1	. •		4/17/98 6:01	41.174	28.415
4/17/98 8:05	60.31	0.1			4/17/98 6:05	43.043	28.515
4/17/98 8:09	60.306	0.09	•		4/17/98 6:09	44.942	28.635
4/17/98 8:13	60.335	-0.01			4/17/98 6:13	46.857	28.61
4/17/98 8:17	60.33	0.045			4/17/98 6:17	48.746	28.7
4/17/98 8:21	60.324	-0.035			4/17/98 6:21	50.669	28.785
4/17/98 8:25	60.333	-0.14	•		4/17/98 6:25	52.579	28.525
4/17/98 8:29	60.339	-0.11			4/17/98 6:29	54.486	25.99
4/17/98 8:33	60.317	0.05			4/17/98 6:33	56.426	22.81
4/17/98 8:37	60.305	-0.035			4/17/98 6:37	58.284	13.01
4/17/98 8:41	60.317	-0.065			4/17/98 6:41	59.684	2.53
4/17/98 8:45	60.327	-0.06			4/17/98 6:45	60.988	-4.86
4/17/98 8:49	60.298	0.02			4/17/98 6:49	60.886	-4.815
4/17/98 8:53	60.304	0.03			4/17/98 6:53	60.19	-1.515
4/17/98 8:57	60.315	0.1			4/17/98 6:57	60.016	-0.625
4/17/98 9:01	60.302	-0.04			4/17/98 7:01	59.923	-0.215
4/17/98 9:05	60.31	-0.06			4/17/98 7:05	59.887	-0.05
4/17/98 9:09	60.335	-0.065			4/17/98 7:09	59.891	-0.13
4/17/98 9:13	60.294	0.035	*****		4/17/98 7:13	59.88	-0.1
4/17/98 9:17	60.298	0.04	•	,=	4/17/98 7:17	59.877	-0.105
4/17/98 9:21	60.322	-0.055			4/17/98 7:21	59.865	0.045
4/17/98 9:25	60.301	0.115			4/17/98 7:25	59.86	-0.015
4/17/98 9:29	60.306	-0.075			4/17/98 7:29	59.856	-0.005
4/17/98 9:33	60.311	0.015			4/17/98 7:33	59.874	0.055
4/17/98 9:37	60.324	-0.015			4/17/98 7:37	59.857	0.1
4/17/98 9:41	60.291	0.165			4/17/98 7:41	59.855	0.05
4/17/98 9:45	60.314	0.005			4/17/98 7:45	59.885	-0.165
4/17/98 9:49	60.321	-0.05			4/17/98 7:49	59.877	-0.035
4/17/98 9:53	60.324	-0.035			4/17/98 7:53	59.865	0.1
4/17/98 9:57	60.315	0.08			4/17/98 7:57	59.852	0.05
4/17/98 10:01	60.311	0.05			4/17/98 8:01	59.87	0.005
4/17/98 10:05	60.317	0.045			4/17/98 8:05	59.885	-0.09
4/17/98 10:09	60.331	-0.015			4/17/98 8:09	59.862	0.085
4/17/98 10:13	60.321	-0.095	•		4/17/98 8:13	59.871	-0.105
4/17/98 10:17	60.326	0.025			4/17/98 8:17	59.867	-0.15
4/17/98 10:21	60.328	-0.025			4/17/98 8:21	59.879	-0.03
4/17/98 10:25	60.302	0.21			4/17/98 8:25	59.85	0.05
4/17/98 10:29	60.331	-0.095			4/17/98 8:29	59.837	0.08
4/17/98 10:33	60.323	-0.105			4/17/98 8:33	59.873	0.045
4/17/98 10:37	60.344	-1.3			4/17/98 8:37	59.86	0.065
4/17/98 10:41	60.312	-5.905			4/17/98 8:41	59.853	0.13
4/17/98 10:45	60.302	-12.68			4/17/98 8:45	59.882	0.04
4/17/98 10:49	60.084	-17.18			4/17/98 8:49	59.873	0.02
4/17/98 10:53	59.131	-19.845			4/17/98 8:53	59.879	0.03
4/17/98 10:57	57.766	-17.085			4/17/98 8:57	59.89	-0.095
	3						

4/17/98 11:01	56.648	-16.685		4/17/98 9:01	59.877	-0.04
4/17/98 11:05	55.162	-15.19		4/17/98 9:05	59.885	-0.155
4/17/98 11:09	54.349	-19.415		4/17/98 9:09	59.871	0.03
4/17/98 11:13	53.311	-23.155		4/17/98 9:13	59.869	-0.06
4/17/98 11:17	52.124	-26.335		4/17/98 9:17	59.854	0.23
4/17/98 11:21	50.466	-30.09		4/17/98 9:21	59.877	0.14
4/17/98 11:25	48.68	-33.745		4/17/98 9:25	59.857	0.205
4/17/98 11:29	46.857	-35.97		4/17/98 9:29	59.9	0.025
4/17/98 11:33	44.448	-34.13		4/17/98 9:33	59.905	-0.08
4/17/98 11:37	41.931	-31.585		4/17/98 9:37	59.898	-0.01
4/17/98 11:41	39.663	-29.92	•	4/17/98 9:41	59.905	-0.03
4/17/98 11:45	37.622	-29.43		4/17/98 9:45	59.889	0.005
4/17/98 11:49	35.614	-29.04		4/17/98 9:49	59.896	0.05
4/17/98 11:53	33.679	-28.95		4/17/98 9:53	59.899	-0.13
4/17/98 11:57	31.736	-28.98		4/17/98 9:57	59.89	-0.02
4/17/98 12:01	29.806	-28.905		4/17/98 10:01	59.906	-0.05
4/17/98 12:05	27.889	-28.855		4/17/98 10:05	59.873	0.04
4/17/98 12:09	25.94	-28.655		4/17/98 10:09	59.886	0.08
4/17/98 12:13	24.025	-28.55		4/17/98 10:13	59.896	0.1
4/17/98 12:17	22.118	-28.54		4/17/98 10:17	59.881	0.125
4/17/98 12:21	20.209	-28.56		4/17/98 10:21	59.902	-0.02
4/17/98 12:25	18.315	-28.585		4/17/98 10:25	59.916	-0.08
4/17/98 12:29	16.41	-28.595		4/17/98 10:29	59.906	0
4/17/98 12:33	14.497	-28.6235		4/17/98 10:33	59.898	0.09
4/17/98 12:37	12.598	-28.5485	•	4/17/98 10:37	59.9	-1.69
4/17/98 12:41	10.691	-28.561		4/17/98 10:41	59.906	-7.655
4/17/98 <b>1</b> 2:45	8.7723	<i>-</i> 28.5765		4/17/98 10:45	59.916	-16.385
4/17/98 12:49	6.8883	-28.698		4/17/98 10:49	59.562	-24.21
4/17/98 12:53	4.9788	-28.5353	•	4/17/98 10:53	58.375	-26.32
4/17/98 12:57	3.057	-28.4615		4/17/98 10:57	56.639	-24.47
4/17/98 13:01	1.1487	-28.5385	1	4/17/98 11:01	54.72	-21.76
4/17/98 13:05	-0.72826	-28.6562		4/17/98 11:05	53.111	-15.84
4/17/98 13:09	-2.6353	-28.9445		4/17/98 11:09	51.745	-15.95
4/17/98 13:13	-4.559	-28.635		4/17/98 11:13	50.368	-19.615
4/17/98 13:17	-6.4595	-28.6825		4/17/98 11:17	49.943	-28.93
4/17/98 13:21	-8.4242	-28.339	•	4/17/98 11:21	48.555	-32:4
4/17/98 13:25	-10.286	-28.465	to a contract of	4/17/98 11:25	46.445	-31.78
4/17/98 13:29	-12.196	<b>-</b> 28.62		4/17/98 11:29	44.157	-30.115
4/17/98 13:33	-14.092	-28.795		4/17/98 11:33	42.075	-29.23
4/17/98 13:37	-15.979	-28.92		4/17/98 11:37	40.089	-29.065
4/17/98 13:41	-17.92	-28.71		4/17/98 11:41	38.134	-28.785
4/17/98 13:45	-19.851	-28.615	•	4/17/98 11:45	36.229	-28.795
4/17/98 13:49	-21.763	-19.515		4/17/98 11:49	34.276	-28.805
4/17/98 13:53	-23.662	-21.51		4/17/98 11:53	32.377	-29.025
4/17/98 13:57	-25.574	-16.41		4/17/98 11:57	30.47	-28.95
4/17/98 14:01	-25.666	-18.335		4/17/98 12:01	28.515	-28.675
4/17/98 14:05	-27.964	-7.61		4/17/98 12:05	26.572	-28.415
4/17/98 14:09	-28.856	-3.675		4/17/98 12:09	24.68	-28.735
4/17/98 14:13	-29.333	-1.585		4/17/98 12:13	22.78	-28.835

4/17/98 14:21   -28.591   -0.435	4/17/98 14:17	-29.486	-0.88		4/17/98 12:17	20.889	<b>-28.825</b>
4/17/98 14:29         -29.662         -0.085         4/17/98 12:29         15.124         -28.675           4/17/98 14:37         -29.678         -0.13         4/17/98 12:37         11.22         -28.625           4/17/98 14:37         -29.689         -0.075         4/17/98 12:37         11.28         -28.525           4/17/98 14:41         -29.679         -0.14         4/17/98 12:41         9.389         -28.642           4/17/98 14:45         -29.704         -0.15         4/17/98 12:49         5.575         -28.3469           4/17/98 14:53         -29.707         0.07         4/17/98 12:49         5.575         -28.3469           4/17/98 14:57         -29.734         0.17         4/17/98 12:57         1.796         -28.875           4/17/98 15:01         -29.667         -0.18         4/17/98 13:01         -0.094387         -28.876           4/17/98 15:01         -29.667         -0.18         4/17/98 13:05         -2.0645         -28.520           4/17/98 15:13         -29.70         0.02         4/17/98 13:05         -2.0645         -28.570           4/17/98 15:13         -29.70         -0.02         4/17/98 13:13         -5.8629         -28.100           4/17/98 15:21         -29.70         -0.02	4/17/98 14:21	-29.591	-0.435		4/17/98 12:21	18.933	-28.53
4/17/98 14:33	4/17/98 14:25	-29.65	-0.195		4/17/98 12:25	17.013	-28.665
4/17/88 14:37	4/17/98 14:29	-29.662	-0.085		4/17/98 12:29	15.124	<b>-</b> 28.675
4/17/98 14:41         -29.679         -0.14         4/17/98 12:45         7.486         -28.464           4/17/98 14:49         -29.704         -0.15         4/17/98 12:45         7.486         -28.442           4/17/98 14:49         -29.707         -0.07         4/17/98 12:53         3.6598         -28.6215           4/17/98 14:53         -29.707         0.07         4/17/98 12:53         3.6598         -28.6215           4/17/98 15:01         -29.667         -0.18         4/17/98 13:01         -0.094387         -28.8755           4/17/98 15:05         -29.693         -0.16         4/17/98 13:01         -0.094387         -28.8764           4/17/98 15:05         -29.693         -0.16         4/17/98 13:05         -2.0645         -28.5235           4/17/98 15:13         -29.703         -0.12         4/17/98 13:05         -2.0645         -28.5235           4/17/98 15:13         -29.703         -0.12         4/17/98 13:01         -7.7692         -28.099           4/17/98 15:21         -29.724         -0.7         4/17/98 13:25         -11.495         -28.21           4/17/98 15:25         -29.679         -0.33         4/17/98 13:29         -13.389         -28.355           4/17/98 15:35         -29.129         <	4/17/98 14:33	-29.678	-0.13		4/17/98 12:33	13.227	-28.705
4/17/98 14:45         -29.704         -0.15         4/17/98 12:45         7.486         -26.442           4/17/98 14:49         -29.704         0.185         4/17/98 12:49         5.575         -28.369           4/17/98 14:57         -29.734         0.17         4/17/98 12:57         1.7976         -28.8755           4/17/98 15:05         -29.667         -0.18         4/17/98 13:05         -0.045         -28.8755           4/17/98 15:05         -29.6693         -0.16         4/17/98 13:05         -20.645         -28.8253           4/17/98 15:05         -29.693         -0.16         4/17/98 13:05         -20.645         -28.8236           4/17/98 15:05         -29.693         -0.12         4/17/98 13:09         -3.9775         -28.701           4/17/98 15:13         -29.703         0.12         4/17/98 13:09         -3.9775         -28.701           4/17/98 15:17         -29.725         -0.02         4/17/98 13:21         -9.7177         -27.5265           4/17/98 15:25         -29.679         -0.33         4/17/98 13:25         -11.495         -28.21           4/17/98 15:37         -29.745         0.61         4/17/98 13:33         -15.223         -28.87           4/17/98 15:37         -29.629         0.0	4/17/98 14:37	-29.689	-0.075		4/17/98 12:37	11.28	-28.525
4/17/98 14:49         -29.704         0.185         4/17/98 12:49         5.575         -28.3469           4/17/98 14:57         -29.707         0.07         4/17/98 12:57         1.7976         -28.6215           4/17/98 15:01         -29.667         -0.18         4/17/98 13:01         -0.094387         -28.8426           4/17/98 15:05         -29.693         -0.16         4/17/98 13:01         -0.094387         -28.8426           4/17/98 15:09         -29.77         -0.02         4/17/98 13:09         -3.975         -28.701           4/17/98 15:13         -29.703         0.12         4/17/98 13:13         -5.8629         -28.1605           4/17/98 15:21         -29.703         0.12         4/17/98 13:13         -5.8629         -28.1605           4/17/98 15:21         -29.704         -0.7         4/17/98 13:21         -9.7177         -27.5265           4/17/98 15:23         -29.844         -0.6         4/17/98 13:25         -11.495         -28.21           4/17/98 15:37         -29.745         0.61         4/17/98 13:37         -17.137         -28.89           4/17/98 15:49         -29.623         0.05         4/17/98 13:45         -20.997         -25.325           4/17/98 15:53         -29.629         0	4/17/98 14:41	-29.679	-0.14		4/17/98 12:41	9.389	-28.646
4/17/98 14:53   -29.707   0.07   4/17/98 12:53   3.6598   -28.6215   4/17/98 14:57   -29.667   -0.18   4/17/98 13:01   -0.094387   -28.8256   4/17/98 15:05   -29.693   -0.16   4/17/98 13:05   -2.0645   -28.5235   4/17/98 15:05   -29.693   -0.16   4/17/98 13:05   -2.0645   -28.5235   4/17/98 15:13   -29.703   0.12   4/17/98 13:13   -5.8629   -28.1605   4/17/98 15:17   -29.725   -0.02   4/17/98 13:17   -7.7692   -28.099   4/17/98 15:21   -29.704   -0.7   4/17/98 13:21   -9.7177   -27.5265   4/17/98 15:25   -29.679   -0.33   4/17/98 13:25   -11.495   -28.21   4/17/98 15:33   -29.844   1.06   4/17/98 13:23   -11.495   -28.21   4/17/98 15:37   -29.725   0.61   4/17/98 13:33   -15.223   -28.875   4/17/98 15:37   -29.725   0.61   4/17/98 13:33   -15.223   -28.875   4/17/98 15:45   -29.602   0.385   4/17/98 13:37   -17.137   -28.89   4/17/98 15:45   -29.632   0.005   4/17/98 13:41   -19.06   -28.91   4/17/98 15:55   -29.632   0.005   4/17/98 13:45   -20.997   -25.325   4/17/98 15:55   -29.631   0.115   4/17/98 13:55   -20.997   -25.325   4/17/98 16:05   -29.631   0.115   4/17/98 13:57   -26.062   -16.665   4/17/98 16:05   -29.631   0.115   4/17/98 14:05   -28.995   -1.805   4/17/98 16:05   -29.631   0.15   4/17/98 14:05   -29.995   -1.805   4/17/98 16:05   -29.631   0.15   4/17/98 14:05   -29.995   -1.805   4/17/98 16:05   -29.631   0.16   4/17/98 14:05   -29.995   -1.805   4/17/98 16:17   -29.69   0.004   4/17/98 14:13   -29.637   -0.885   4/17/98 16:21   -29.6   0.004   4/17/98 14:21   -29.756   -0.08   4/17/98 16:33   -29.529   -0.08   4/17/98 14:25   -29.814   -0.08   4/17/98 16:35   -29.630   0.04   4/17/98 14:25   -29.814   -0.08   4/17/98 16:37   -29.630   0.04   4/17/98 14:25   -29.814   -0.08   4/17/98 16:37   -29.630   0.04   4/17/98 14:25   -29.814   -0.08   4/17/98 16:37   -29.630   0.04   4/17/98 14:25   -29.814   -0.08   4/17/98 16:37   -29.630   0.05   4/17/98 14:25   -29.814   -0.08   4/17/98 16:37   -29.630   0.05   4/17/98 14:25   -29.814   -0.08   4/17/98 16:37   -29.630   0.05   4/17/98 14:45   -2	4/17/98 14:45	-29.704	-0.15		4/17/98 12:45	7.486	-28.442
4/17/98 14:57         -29.734         0.17         4/17/98 15:57         1.7976         -28.8755           4/17/98 15:01         -29.667         -0.18         4/17/98 13:01         -0.094387         -28.8426           4/17/98 15:05         -29.693         -0.16         4/17/98 13:09         -2.0645         -28.5235           4/17/98 15:09         -29.7         -0.02         4/17/98 13:03         -5.8629         -28.1605           4/17/98 15:17         -29.725         -0.02         4/17/98 13:13         -5.8629         -28.1605           4/17/98 15:21         -29.704         -0.7         4/17/98 13:21         -9.7177         -27.5265           4/17/98 15:25         -29.679         -0.33         4/17/98 13:29         -13.389         -28.355           4/17/98 15:33         -29.844         1.06         4/17/98 13:33         -17.137         -28.89           4/17/98 15:41         -29.706         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:49         -29.623         0.005         4/17/98 13:49         -22.915         -19.45           4/17/98 16:49         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 16:57         -29.631         0.	4/17/98 14:49	-29.704	0.185		4/17/98 12:49	5.575	-28.3469
4/17/98 15:01         -29.667         -0.18         4/17/98 13:01         -0.094387         -28.8426           4/17/98 15:09         -29.93         -0.16         4/17/98 13:05         -2.0645         -28.5235         -28.701           4/17/98 15:13         -29.703         0.12         4/17/98 13:13         -5.8629         -28.1605           4/17/98 15:17         -29.725         -0.02         4/17/98 13:17         -7.7662         -28.09           4/17/98 15:21         -29.704         -0.7         4/17/98 13:21         -9.717         -27.5265           4/17/98 15:25         -29.679         -0.33         4/17/98 13:25         -11.495         -28.21           4/17/98 15:33         -29.729         0.115         4/17/98 13:25         -13.389         -28.355           4/17/98 15:37         -29.745         0.61         4/17/98 13:33         -15.223         -28.87           4/17/98 15:41         -29.60         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:53         -29.623         0.005         4/17/98 13:45         -20.93         -29.634           4/17/98 16:54         -29.633         0.07         4/17/98 13:57         -26.062         -19.65           4/17/98 16:49         -29.62	4/17/98 14:53	-29.707	0.07		4/17/98 12:53	3.6598	-28.6215
4/17/98 15:05         -29.693         -0.16         4/17/98 13:05         -2.0645         -28.5235           4/17/98 16:09         -29.7         -0.02         4/17/98 13:09         -3.9775         -28.701           4/17/98 16:13         -29.703         0.12         4/17/98 13:13         -5.8629         -28.1605           4/17/98 15:17         -29.725         -0.02         4/17/98 13:17         -7.7692         -28.099           4/17/98 15:21         -29.704         -0.7         4/17/98 13:25         -11.495         -28.01           4/17/98 15:25         -29.679         -0.33         4/17/98 13:25         -11.495         -28.21           4/17/98 15:29         -29.729         0.115         4/17/98 13:25         -11.495         -28.25           4/17/98 15:33         -29.844         1.06         4/17/98 13:33         -15.223         -28.87           4/17/98 15:41         -29.706         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:45         -29.632         0.005         4/17/98 13:45         -20.997         -25.325           4/17/98 15:57         -29.631         0.17         4/17/98 13:49         -22.915         -19.45           4/17/98 16:57         -29.631         0.115 <td>4/17/98 14:57</td> <td>-29.734</td> <td>0.17</td> <td>•</td> <td>4/17/98 12:57</td> <td>1.7976</td> <td>-28.8755</td>	4/17/98 14:57	-29.734	0.17	•	4/17/98 12:57	1.7976	-28.8755
4/17/98 15:09         -29.7         -0.02         4/17/98 13:09         -3.9775         -28.701           4/17/98 15:13         -29.703         0.12         4/17/98 13:13         -5.8629         -28.609           4/17/98 15:17         -29.725         -0.02         4/17/98 13:17         -7.7692         -28.099           4/17/98 15:21         -29.704         -0.7         4/17/98 13:25         -11.495         -28.21           4/17/98 15:25         -29.679         -0.33         4/17/98 13:25         -11.495         -28.21           4/17/98 15:33         -29.844         1.06         4/17/98 13:33         -15.223         -28.87           4/17/98 15:37         -29.745         0.61         4/17/98 13:34         -19.06         -28.91           4/17/98 15:41         -29.706         0.385         4/17/98 13:45         -20.97         -25.325           4/17/98 15:49         -29.623         0.005         4/17/98 13:45         -20.97         -25.325           4/17/98 15:53         -29.629         0.09         4/17/98 13:53         -24.842         -20.635           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.605         -14.66           4/17/98 16:07         -29.608         0.04	4/17/98 15:01	<i>-</i> 29.667	-0.18		4/17/98 13:01	-0.094387	-28.8426
4/17/98 15:13         -29.703         0.12         4/17/98 13:13         -5.8629         -28.1605           4/17/98 15:17         -29.725         -0.02         4/17/98 13:21         -7.7692         -28.099           4/17/98 15:21         -29.704         -0.7         4/17/98 13:21         -9.7177         -27.5265           4/17/98 15:25         -29.679         -0.33         4/17/98 13:29         -13.389         -28.21           4/17/98 15:33         -29.844         1.06         4/17/98 13:33         -15.223         -28.87           4/17/98 15:37         -29.765         0.61         4/17/98 13:33         -15.223         -28.87           4/17/98 15:41         -29.706         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:45         -29.632         0.005         4/17/98 13:49         -22.915         -19.45           4/17/98 15:53         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 16:05         -29.631         0.115         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.052         -14.16           4/17/98 16:05         -29.611         0.16	4/17/98 15:05	-29.693	-0.16	•	4/17/98 13:05	<i>-</i> 2.0645	-28.5235
4/17/98 15:17         -29.725         -0.02         4/17/98 13:17         -7.7692         -28.099           4/17/98 15:25         -29.679         -0.33         4/17/98 13:21         -9.7177         -27.5265           4/17/98 15:25         -29.679         -0.33         4/17/98 13:25         -11.495         -28.21           4/17/98 15:33         -29.844         1.06         4/17/98 13:33         -15.223         -28.87           4/17/98 15:37         -29.745         0.61         4/17/98 13:37         -17.137         -28.89           4/17/98 15:41         -29.706         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:49         -29.623         0.07         4/17/98 13:45         -20.997         -25.325           4/17/98 15:49         -29.623         0.07         4/17/98 13:53         -24.842         -20.635           4/17/98 15:57         -29.631         0.115         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29.603         0.07         4/17/98 14:05         -28.969         -3.755           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:13         -29.582         0.06	4/17/98 15:09	<b>-</b> 29.7	-0.02		4/17/98 13:09	-3.9775	-28.701
4/17/98 15:21         -29.704         -0.7         4/17/98 13:21         -9.7177         -27.5265           4/17/98 15:29         -29.729         -0.33         4/17/98 13:25         -11.495         -28.21           4/17/98 15:39         -29.729         0.115         4/17/98 13:29         -13.389         -28.355           4/17/98 15:33         -29.844         1.06         4/17/98 13:37         -17.137         -28.89           4/17/98 15:37         -29.745         0.61         4/17/98 13:37         -17.137         -28.89           4/17/98 15:41         -29.706         0.385         4/17/98 13:45         -20.997         -25.325           4/17/98 15:49         -29.623         0.005         4/17/98 13:45         -20.997         -25.325           4/17/98 15:59         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 15:57         -29.631         0.115         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.805         -14.16           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:13         -29.528         0.06 <td>4/17/98 15:13</td> <td>-29.703</td> <td>0.12</td> <td></td> <td>4/17/98 13:13</td> <td>-5.8629</td> <td>-28.1605</td>	4/17/98 15:13	-29.703	0.12		4/17/98 13:13	-5.8629	-28.1605
4/17/98 15:25         -29.679         -0.33         4/17/98 13:25         -11.495         -28.21           4/17/98 15:29         -29.729         0.115         4/17/98 13:29         -13.389         -28.355           4/17/98 15:33         -29.844         1.06         4/17/98 13:37         -17.137         -28.89           4/17/98 15:37         -29.706         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:41         -29.632         0.005         4/17/98 13:45         -20.997         -25.325           4/17/98 15:49         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 15:57         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 15:57         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 16:01         -29.609         0.135         4/17/98 13:57         -26.062         -16.665           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:13         -29.582         0.06         4/17/98 14:13         -29.637         -0.88           4/17/98 16:21         -29.6         0.04	4/17/98 15:17	-29.725	-0.02		4/17/98 13:17	<i>-</i> 7.7692	-28.099
4/17/98 15:29         -29.729         0.115         4/17/98 13:32         -13.389         -28.355           4/17/98 15:33         -29.844         1.06         4/17/98 13:33         -15.223         -28.87           4/17/98 15:37         -29.745         0.61         4/17/98 13:37         -17.137         -28.89           4/17/98 15:41         -29.06         0.385         4/17/98 13:45         -20.997         -25.325           4/17/98 15:49         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 15:59         -29.623         0.07         4/17/98 13:53         -24.842         -20.635           4/17/98 15:57         -29.631         0.115         4/17/98 13:53         -24.842         -20.635           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.805         -14.16           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:09         -29.608         0.04         4/17/98 14:09         -29.395         -1.805           4/17/98 16:17         -29.579         0.04         4/17/98 14:17         -29.72         -0.295           4/17/98 16:21         -29.57         -0.33	4/17/98 15:21	-29.704	-0.7		4/17/98 13:21	-9.7177	-27.5265
4/17/98 15:33         -29.844         1.06         4/17/98 13:33         -15.223         -28.87           4/17/98 15:37         -29.745         0.61         4/17/98 13:37         -17.137         -28.89           4/17/98 15:41         -29.706         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:45         -29.623         0.007         4/17/98 13:45         -20.997         -25.325           4/17/98 15:53         -29.629         0.09         4/17/98 13:53         -24.842         -20.635           4/17/98 15:57         -29.631         0.115         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.805         -14.16           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:09         -29.608         0.04         4/17/98 14:09         -29.395         -1.805           4/17/98 16:13         -29.582         0.06         4/17/98 14:13         -29.637         -0.885           4/17/98 16:21         -29.6         0.04         4/17/98 14:21         -29.72         -0.295           4/17/98 16:22         -29.571         -0.33	4/17/98 15:25	-29.679	-0.33		4/17/98 13:25	-11.495	-28.21
4/17/98 15:37         -29.745         0.61         4/17/98 13:37         -17.137         -28.89           4/17/98 15:41         -29.706         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:45         -29.632         0.005         4/17/98 13:45         -20.997         -25.325           4/17/98 15:54         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 15:55         -29.629         0.09         4/17/98 13:53         -24.842         -20.635           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.805         -14.16           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:13         -29.582         0.06         4/17/98 14:13         -29.637         -0.885           4/17/98 16:17         -29.57         0.04         4/17/98 14:17         -29.72         -0.295           4/17/98 16:21         -29.6         0.04         4/17/98 14:21         -29.756         -0.08           4/17/98 16:33         -29.57         -0.33         4/17/98 14:25         -29.814         -0.08           4/17/98 16:33         -29.592         -0.08 <td< td=""><td>4/17/98 15:29</td><td>-29.729</td><td>0.115</td><td></td><td>4/17/98 13:29</td><td>-13.389</td><td>-28.355</td></td<>	4/17/98 15:29	-29.729	0.115		4/17/98 13:29	-13.389	-28.355
4/17/98 15:41         -29,706         0.385         4/17/98 13:41         -19.06         -28.91           4/17/98 15:45         -29,632         0.005         4/17/98 13:45         -20.997         -25.325           4/17/98 15:49         -29,623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 15:57         -29,629         0.09         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29,609         0.135         4/17/98 14:01         -26.805         -14.16           4/17/98 16:05         -29,611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:09         -29,608         0.04         4/17/98 14:09         -29.395         -1.805           4/17/98 16:13         -29,582         0.06         4/17/98 14:17         -29.72         -0.295           4/17/98 16:17         -29,579         0.04         4/17/98 14:21         -29,637         -0.885           4/17/98 16:21         -29.6         0.04         4/17/98 14:21         -29,756         -0.08           4/17/98 16:37         -29.6         0.04         4/17/98 14:25         -29.814         -0.08           4/17/98 16:33         -29.577         -0.33	4/17/98 15:33	-29.844	1.06		4/17/98 13:33	-15.223	-28.87
4/17/98 15:45         -29.632         0.005         4/17/98 13:45         -20.997         -25.325           4/17/98 15:49         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 15:53         -29.629         0.09         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29.609         0.115         4/17/98 14:01         -26.062         -16.665           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.062         -14.16           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:09         -29.608         0.04         4/17/98 14:09         -29.395         -1.805           4/17/98 16:13         -29.582         0.06         4/17/98 14:13         -29.637         -0.885           4/17/98 16:17         -29.579         0.04         4/17/98 14:17         -29.72         -0.295           4/17/98 16:21         -29.6         0.04         4/17/98 14:21         -29.756         -0.08           4/17/98 16:33         -29.57         -0.33         4/17/98 14:29         -29.779         0.03           4/17/98 16:33         -29.592         -0.08         <	4/17/98 15:37	-29.745	0.61		4/17/98 13:37	-17.137	-28.89
4/17/98 15:49         -29.623         0.07         4/17/98 13:49         -22.915         -19.45           4/17/98 15:53         -29.629         0.09         4/17/98 13:53         -24.842         -20.635           4/17/98 15:57         -29.631         0.115         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.805         -14.16           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:09         -29.608         0.04         4/17/98 14:09         -29.395         -1.805           4/17/98 16:13         -29.582         0.06         4/17/98 14:13         -29.637         -0.885           4/17/98 16:17         -29.579         0.04         4/17/98 14:21         -29.72         -0.295           4/17/98 16:25         -29.57         -0.33         4/17/98 14:25         -29.814         -0.08           4/17/98 16:29         -29.571         -0.315         4/17/98 14:25         -29.814         -0.08           4/17/98 16:33         -29.592         -0.08         4/17/98 14:33         -29.772         -0.245           4/17/98 16:45         -29.636         0.295	4/17/98 15:41	-29.706	0.385		4/17/98 13:41	-19.06	-28.91
4/17/98 15:53         -29.629         0.09         4/17/98 13:53         -24.842         -20.635           4/17/98 15:57         -29.631         0.115         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.805         -14.16           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:09         -29.608         0.04         4/17/98 14:09         -29.395         -1.805           4/17/98 16:13         -29.582         0.06         4/17/98 14:13         -29.637         -0.885           4/17/98 16:17         -29.579         0.04         4/17/98 14:17         -29.72         -0.295           4/17/98 16:21         -29.6         0.04         4/17/98 14:21         -29.72         -0.295           4/17/98 16:25         -29.57         -0.33         4/17/98 14:25         -29.814         -0.08           4/17/98 16:33         -29.592         -0.08         4/17/98 14:33         -29.772         -0.245           4/17/98 16:37         -29.636         0.295         4/17/98 14:37         -29.83         0.16           4/17/98 16:45         -29.608         -0.045 <t< td=""><td>4/17/98 15:45</td><td>-29.632</td><td>0.005</td><td>e e e e e e e e e e e e e e e e e e e</td><td>4/17/98 13:45</td><td>-20.997</td><td>-25.325</td></t<>	4/17/98 15:45	-29.632	0.005	e e e e e e e e e e e e e e e e e e e	4/17/98 13:45	-20.997	-25.325
4/17/98 15:57         -29.631         0.115         4/17/98 13:57         -26.062         -16.665           4/17/98 16:01         -29.609         0.135         4/17/98 14:01         -26.805         -14.16           4/17/98 16:05         -29.611         0.16         4/17/98 14:05         -28.969         -3.755           4/17/98 16:09         -29.608         0.04         4/17/98 14:09         -29.395         -1.805           4/17/98 16:13         -29.582         0.06         4/17/98 14:13         -29.637         -0.885           4/17/98 16:17         -29.579         0.04         4/17/98 14:17         -29.72         -0.295           4/17/98 16:21         -29.6         0.04         4/17/98 14:21         -29.756         -0.08           4/17/98 16:25         -29.57         -0.33         4/17/98 14:25         -29.814         -0.08           4/17/98 16:33         -29.592         -0.08         4/17/98 14:25         -29.814         -0.08           4/17/98 16:37         -29.636         0.295         4/17/98 14:33         -29.772         -0.245           4/17/98 16:41         -29.634         0.135         4/17/98 14:41         -29.773         -0.14           4/17/98 16:45         -29.608         -0.045         <	4/17/98 15:49	-29.623	0.07		4/17/98 13:49	-22.915	-19.45
4/17/98 16:01       -29.609       0.135       4/17/98 14:01       -26.805       -14.16         4/17/98 16:05       -29.611       0.16       4/17/98 14:05       -28.969       -3.755         4/17/98 16:09       -29.608       0.04       4/17/98 14:09       -29.395       -1.805         4/17/98 16:13       -29.582       0.06       4/17/98 14:13       -29.637       -0.885         4/17/98 16:17       -29.579       0.04       4/17/98 14:17       -29.72       -0.295         4/17/98 16:21       -29.6       0.04       4/17/98 14:21       -29.756       -0.08         4/17/98 16:25       -29.57       -0.33       4/17/98 14:25       -29.814       -0.08         4/17/98 16:29       -29.571       -0.315       4/17/98 14:29       -29.779       0.03         4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577 <td>4/17/98 15:53</td> <td>-29.629</td> <td>0.09</td> <td></td> <td>4/17/98 13:53</td> <td>-24.842</td> <td>-20.635</td>	4/17/98 15:53	-29.629	0.09		4/17/98 13:53	-24.842	-20.635
4/17/98 16:05       -29.611       0.16       4/17/98 14:05       -28.969       -3.755         4/17/98 16:09       -29.608       0.04       4/17/98 14:09       -29.395       -1.805         4/17/98 16:13       -29.582       0.06       4/17/98 14:13       -29.637       -0.885         4/17/98 16:17       -29.579       0.04       4/17/98 14:17       -29.72       -0.295         4/17/98 16:21       -29.6       0.04       4/17/98 14:21       -29.756       -0.08         4/17/98 16:25       -29.57       -0.33       4/17/98 14:25       -29.814       -0.08         4/17/98 16:33       -29.592       -0.08       4/17/98 14:29       -29.779       0.03         4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:49       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617	4/17/98 15:57	-29.631	0.115		4/17/98 13:57	-26.062	-16.665
4/17/98 16:09       -29.608       0.04       4/17/98 14:09       -29.395       -1.805         4/17/98 16:13       -29.582       0.06       4/17/98 14:13       -29.637       -0.885         4/17/98 16:17       -29.579       0.04       4/17/98 14:17       -29.72       -0.295         4/17/98 16:21       -29.6       0.04       4/17/98 14:21       -29.756       -0.08         4/17/98 16:25       -29.57       -0.33       4/17/98 14:25       -29.814       -0.08         4/17/98 16:29       -29.571       -0.315       4/17/98 14:29       -29.779       0.03         4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.60	4/17/98 16:01	-29.609	0.135		4/17/98 14:01	-26.805	-14.16
4/17/98 16:13       -29.582       0.06       4/17/98 14:13       -29.637       -0.885         4/17/98 16:17       -29.579       0.04       4/17/98 14:17       -29.72       -0.295         4/17/98 16:21       -29.6       0.04       4/17/98 14:21       -29.756       -0.08         4/17/98 16:25       -29.57       -0.33       4/17/98 14:25       -29.814       -0.08         4/17/98 16:29       -29.571       -0.315       4/17/98 14:29       -29.779       0.03         4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6	4/17/98 16:05	-29.611	0.16		4/17/98 14:05	-28.969	-3.755
4/17/98 16:17       -29.579       0.04       4/17/98 14:17       -29.72       -0.295         4/17/98 16:21       -29.6       0.04       4/17/98 14:21       -29.756       -0.08         4/17/98 16:25       -29.57       -0.33       4/17/98 14:25       -29.814       -0.08         4/17/98 16:29       -29.571       -0.315       4/17/98 14:29       -29.779       0.03         4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:13       -29.623	4/17/98 16:09	-29.608	0.04		4/17/98 14:09	-29.395	-1.805
4/17/98 16:21       -29.6       0.04       4/17/98 14:21       -29.756       -0.08         4/17/98 16:25       -29.57       -0.33       4/17/98 14:25       -29.814       -0.08         4/17/98 16:29       -29.571       -0.315       4/17/98 14:29       -29.779       0.03         4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 15:01       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:05       -29.787       0.075         4/17/98 17:09       -29.6	4/17/98 16:13	-29.582	0.06		4/17/98 14:13	-29.637	-0.885
4/17/98 16:25       -29.57       -0.33       4/17/98 14:25       -29.814       -0.08         4/17/98 16:29       -29.571       -0.315       4/17/98 14:29       -29.779       0.03         4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:17       -29.617 <td>4/17/98 16:17</td> <td>-29.579</td> <td>0.04</td> <td></td> <td>4/17/98 14:17</td> <td><b>-</b>29.72</td> <td>-0.295</td>	4/17/98 16:17	-29.579	0.04		4/17/98 14:17	<b>-</b> 29.72	-0.295
4/17/98 16:29       -29.571       -0.315       4/17/98 14:29       -29.779       0.03         4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:03       -29.623       0.135       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.617       0.07       4/17/98 15:13       -29.772       -0.84         4/17/98 17:21       -29.619 </td <td>4/17/98 16:21</td> <td>-29.6</td> <td>0.04</td> <td></td> <td>4/17/98 14:21</td> <td>-29.756</td> <td>-0.08</td>	4/17/98 16:21	-29.6	0.04		4/17/98 14:21	-29.756	-0.08
4/17/98 16:33       -29.592       -0.08       4/17/98 14:33       -29.772       -0.245         4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:09       -29.6       -0.095       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.617       0.07       4/17/98 15:13       -29.797       0.12         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596 <td>4/17/98 16:25</td> <td>-29.57</td> <td>-0.33</td> <td></td> <td>4/17/98 14:25</td> <td>-29.814</td> <td>-0.08</td>	4/17/98 16:25	-29.57	-0.33		4/17/98 14:25	-29.814	-0.08
4/17/98 16:37       -29.636       0.295       4/17/98 14:37       -29.83       0.16         4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:09       -29.6       -0.095       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 16:29	-29.571	-0.315		4/17/98 14:29	<b>-</b> 29.779	0.03
4/17/98 16:41       -29.634       0.135       4/17/98 14:41       -29.773       -0.14         4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.794       -0.02         4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:25       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 16:33	<b>-</b> 29.592	-0.08		4/17/98 14:33	-29.772	-0.245
4/17/98 16:45       -29.608       -0.045       4/17/98 14:45       -29.821       0.085         4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.794       -0.02         4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 16:37	-29.636	0.295		4/17/98 14:37		
4/17/98 16:49       -29.577       -0.155       4/17/98 14:49       -29.798       0.19         4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:09       -29.6       -0.095       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:21       -29.617       0.07       4/17/98 15:21       -29.772       -0.84         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 16:41	<b>-29.634</b>	0.135		4/17/98 14:41		•
4/17/98 16:53       -29.607       0.035       4/17/98 14:53       -29.801       0.07         4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:09       -29.6       -0.095       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 16:45	-29.608	-0.045				
4/17/98 16:57       -29.617       0.085       4/17/98 14:57       -29.804       0.05         4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:09       -29.6       -0.095       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 16:49	-29.577	-0.155				
4/17/98 17:01       -29.608       -0.075       4/17/98 15:01       -29.76       -0.185         4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:09       -29.6       -0.095       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09		-29.607			** * * * *		
4/17/98 17:05       -29.6       -0.085       4/17/98 15:05       -29.787       0.075         4/17/98 17:09       -29.6       -0.095       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 16:57	<b>-</b> 29.617	0.085				
4/17/98 17:09       -29.6       -0.095       4/17/98 15:09       -29.794       -0.02         4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 17:01	-29.608	-0.075				
4/17/98 17:13       -29.623       0.135       4/17/98 15:13       -29.797       0.12         4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09							
4/17/98 17:17       -29.617       0.07       4/17/98 15:17       -29.772       -0.84         4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09	4/17/98 17:09	-29.6	-0.095				
4/17/98 17:21       -29.619       -0.035       4/17/98 15:21       -29.798       -0.35         4/17/98 17:25       -29.596       -0.26       4/17/98 15:25       -29.773       -0.09		-29.623					
4/17/98 17:25 -29.596 -0.26 4/17/98 15:25 -29.773 -0.09							
4/17/98 17:29 -29.603 -0.13 4/17/98 15:29 -29.94 0.815							
	4/17/98 17:29	-29.603	-0.13		4/17/98 15:29	-29.94	0.815

4/17/98 17:33	-29.626	0.18		4/17/98 15:33	-29.868	0.595
4/17/98 17:37	-29.648	0.01		4/17/98 15:37	-29.791	0.255
4/17/98 17:41	-29.629	0.085		4/17/98 15:41	-29.777	0.27
4/17/98 17:45	-29.59	-0.035		4/17/98 15:45	-29.749	0.12
4/17/98 17:49	-29.646	0.11	•	4/17/98 15:49	-29.74	0.07
4/17/98 17:53	-29.612	0.01		4/17/98 15:53	-29.723	0.09
4/17/98 17:57	-29.597	0.035	the second of the second	4/17/98 15:57	-29.725	0.235
4/17/98 18:01	-29.624	0.125		4/17/98 16:01	-29.726	0.135
4/17/98 18:05	-29.61	0.13		4/17/98 16:05	-29.705	-0.19
4/17/98 18:09	-29.59	4.65	•	4/17/98 16:09	-29.678	-0.315
4/17/98 18:13	-29.599	13.825	•	4/17/98 16:13	-29.699	0.06
4/17/98 18:17	-29.584	22.865		4/17/98 16:17	-29.743	-0.08
4/17/98 18:21	-28.66	27.67		4/17/98 16:21	-29.741	0.16
4/17/98 18:25	-26.834	27.885		4/17/98 16:25	-29.687	-0.215
4/17/98 18:29	-25.011	28.22		4/17/98 16:29	-29.759	0.39
4/17/98 18:33	-23.126	28.165		4/17/98 16:33	-29.709	0.04
4/17/98 18:37	-21.257	28.395		4/17/98 16:37	-29.73	-0.29
4/17/98 18:41	-19.367	28.39		4/17/98 16:41	-29.681	-0.095
4/17/98 18:45	-17.493	28.445		4/17/98 16:45	-29.701	0.07
4/17/98 18:49	-15.578	28.2295		4/17/98 16:49	-29.788	0.43
4/17/98 18:53	-13.689	28.258		4/17/98 16:53	-29.7	0.035
4/17/98 18:57	-11.804	28.265		4/17/98 16:57	-29.687	-0.03
4/17/98 19:01	-9.9321	28.407		4/17/98 17:01	-29.702	-0.075
4/17/98 19:05	-8.0374	28.194	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	4/17/98 17:05	-29.693	-0.205
4/17/98 19:09	-6.151	28.31165		4/17/98 17:09	-29.693	-0.215
4/17/98 19:13	-4.2507	28.209		4/17/98 17:13	-29.717	0.015
4/17/98 19:17	-2.3986	28.4365		4/17/98 17:17	-29.734	-0.165
4/17/98 19:21	-0.48867	28.20635		4/17/98 17:21	-29.736	-0.15
4/17/98 19:25	1.3911	28.3495		4/17/98 17:25	-29.714	-0.26
4/17/98 19:29	3.2887	28.33		4/17/98 17:29	<i>-</i> 29.767	0.105
4/17/98 19:33	5.1526	28.442		4/17/98 17:33	-29.766	-0.06
4/17/98 19:37	7.061	28.425		4/17/98 17:37	-29.766	0.135
4/17/98 19:41	8.9547	28.4115		4/17/98 17:41	-29.746	0.085
4/17/98 19:45	10.841	28.505		4/17/98 17:45	-29.778	0.205
4/17/98 19:49	12.746	28.445		4/17/98 17:49	-29.739	0.105
4/17/98 19:53	14.637	28.525		4/17/98 17:53	-29.729	-0.105
4/17/98 19:57	16.542	28.085		4/17/98 17:57	-29.737	0.03
4/17/98 20:01	18.435	23.725		4/17/98 18:01	-29.718	0.01
4/17/98 20:05	20.342	17.015	• • • • • • • • • • • • • • • • • • • •	4/17/98 18:05	-29.75	1.065
4/17/98 20:09	22.159	2.545		4/17/98 18:09	-29.731	9.445
4/17/98 20:13	23.18	<i>-</i> 5.58		4/17/98 18:13	-29.716	18.365
4/17/98 20:17	23.745	-8.6		4/17/98 18:17	-29.537	26.915
4/17/98 20:21	22.668	-3.7	•	4/17/98 18:21	-27.842	27.73
4/17/98 20:25	22.064	-1.265		4/17/98 18:25	-26.043	28.29
4/17/98 20:29	22.025	-1.45		4/17/98 18:29	-24.154	28.27
4/17/98 20:33	21.928	-1.325		4/17/98 18:33	-22.296	28.445
4/17/98 20:37	21.811	-1.035		4/17/98 18:37	-20.385	28.335
4/17/98 20:41	21.735	-0.825		4/17/98 18:41	-18.5	28.445
4/17/98 20:45	21.663	-0.76		4/17/98 18:45	-16.607	28.385
				•		

4/17/98 20:49	21.604	-0.57		4/17/98 18:49	-14.718	28.394 ·
4/17/98 20:53	21.57	-0.505		4/17/98 18:53	-12.811	28.313
4/17/98 20:57	21.511	-0.31		4/17/98 18:57	-10.93	28.431
4/17/98 21:01	21.49	-0.19		4/17/98 19:01	-9.0392	28.238
4/17/98 21:05	21.469	-0.085		4/17/98 19:05	-7.1484	28.2455
4/17/98 21:09	21.449	-0.09		4/17/98 19:09	-5.2438	28.14325
4/17/98 21:13	21.452	0		4/17/98 19:13	-3.3916	28.371
4/17/98 21:17	21.452	0		4/17/98 19:17	-1.4993	28.4865
4/17/98 21:21	21.431	0.105		4/17/98 19:21	0.38485	28.47375
4/17/98 21:25	21.452	0.105		4/17/98 19:25	2.2826	28.615
4/17/98 21:29	21.452	0.21	•	4/17/98 19:29	4.198	28.4865
4/17/98 21:33	21.452	0.19		4/17/98 19:33	6.0796	28.382
4/17/98 21:37	21.473	0.295	•	4/17/98 19:37	8.0056	28.367
4/17/98 21:41	21.494	0.275		4/17/98 19:41	9.8953	28.4585
4/17/98 21:45	21.49	0.4		4/17/98 19:45	11.756	28.555
4/17/98 21:49	21.532	0.31		4/17/98 19:49	13.679	28.495
4/17/98 21:53	21.549	0.31	•	4/17/98 19:53	15.587	28.575
4/17/98 21:57	21.57	0.31		4/17/98 19:57	17.467	25.435
4/17/98 22:01	21.594	0.32		4/17/98 20:01	19.378	17.14
4/17/98 22:05	21.611	0.315		4/17/98 20:05	21.302	4.22
4/17/98 22:09	21.632	0.29		4/17/98 20:09	22.554	-2.235
4/17/98 22:13	21.658	0.215		4/17/98 20:13	22.806	-3.605
4/17/98 22:17	21.674	0.22		4/17/98 20:17	22.146	0.02
4/17/98 22:21	21.69	0.335	manus de la companya de la companya de la companya de la companya de la companya de la companya de la companya	4/17/98 20:21	22.107	-0.475
4/17/98 22:25	21.701	0.365		4/17/98 20:25	22.085	-0.955
4/17/98 22:29	21.718	0.265		4/17/98 20:29	22.15	-1.765
4/17/98 22:33	21.757	0.275		4/17/98 20:33	22.012	-1.54
4/17/98 22:37	21.774	0.2		4/17/98 20:37	21.894	-1.24
4/17/98 22:41	21.771	0.425		4/17/98 20:41	21.797	-0.925
4/17/98 22:45	21.812	0.19		4/17/98 20:45	21.704	-0.545
4/17/98 22:49	21.814	0.235		4/17/98 20:49	21.646	-0.36
4/17/98 22:53	21.856	0.105		4/17/98 20:53	21.612	-0.295
4/17/98 22:57	21.85	0.195		4/17/98 20:57	21.595	-0.11
4/17/98 23:01	21.861	0.22		4/17/98 21:01	21.574	-0.09
4/17/98 23:05	21.877	0.225		4/17/98 21:05	21.553	0.12
4/17/98 23:09	21.889	0.245		4/17/98 21:09	21.573	0.125
4/17/98 23:13	21.905	0.25		4/17/98 21:13	21.556	0.21
4/17/98 23:17	21.922	0.23	•	4/17/98 21:17	21.577	0.105
4/17/98 23:21	21.938	0.155		4/17/98 21:21	21.598	0.105
4/17/98 23:25	21.955	0.13		4/17/98 21:25	21.598	0.21
4/17/98 23:29	21.968	0.04		4/17/98 21:29	21.598	0.315
4/17/98 23:33	21.969	0.075		4/17/98 21:33	21.619	0.29
4/17/98 23:37	21.981	0.08		4/17/98 21:37	21.64	0.185
4/17/98 23:41	21.976	0.165		4/17/98 21:41	21.661	0.165
4/17/98 23:45	21.984	0.17		4/17/98 21:45	21.677	0.295
4/17/98 23:49	21.997	0.065		4/17/98 21:49	21.677	0.315
4/17/98 23:53	22.009	-0.035		4/17/98 21:53	21.694	0.315
4/17/98 23:57	22.018	-0.015		4/17/98 21:57	21.736	0.105
4/18/98 0:01	22.01	0.09		4/17/98 22:01	21.74	0.32
						<del>-</del>

4/18/98 0:05	22.002	0.09		4/17/98 22:05	21.757	0.31
4/18/98 0:09	22.015	0.195		4/17/98 22:09	21.757	0.29
4/18/98 0:13	22.028	-0.01		4/17/98 22:13	21.804	0.21
4/18/98 0:17	22.02	0.115		4/17/98 22:17	21.819	0.12
4/18/98 0:21	22.054	-0.01		4/17/98 22:21	21.815	0.125
4/18/98 0:25	22.026	0.09		4/17/98 22:25	21.846	0.16
4/18/98 0:29	22.043	-0.035		4/17/98 22:29	21.843	0.26
4/18/98 0:33	22.052	0.09		4/17/98 22:33	21.84	0.28
4/18/98 0:37	22.044	-0.01		4/17/98 22:37	21.878	0.2
4/18/98 0:41	22.036	-0.01	:	4/17/98 22:41	21.895	0.115
4/18/98 0:45	22.07	-0.22	•	4/17/98 22:45	21.896	0.29
4/18/98 0:49	22.042	-0.015		4/17/98 22:49	21.918	0.13
4/18/98 0:53	22.034	0.09	•	4/17/98 22:53	21.918	0.21
4/18/98 0:57	22.026	-0.01		4/17/98 22:57	21.954	0.09
4/18/98 1:01	22.039	-0.03		4/17/98 23:01	21.944	0.225
4/18/98 1:05	22.052	-0.135		4/17/98 23:05	21.96	0.12
4/18/98 1:09	22.024	0.07		4/17/98 23:09	21.972	0.04
4/18/98 1:13	22.033	0.01		4/17/98 23:13	21.989	0.04
4/18/98 1:17	22.025	0.01		4/17/98 23:17	21.984	0.025
4/18/98 1:21	22.038	-0.095		4/17/98 23:21	21.98	0.05
4/18/98 1:25	22.035	0.005		4/17/98 23:25	21.997	0.02
4/18/98 1:29	22.027	0.005	•	4/17/98 23:29	21.989	0.14
4/18/98 1:33	22.019	-0.075		4/17/98 23:33	21.99	-0.03
4/18/98 1:37	22.036	-0.075	The second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of th	4/17/98 23:37	22.001	0.08
4/18/98 1:41	22.028	-0.075		4/17/98 23:41	22.017	-0.04
4/18/98 1:45	22.004	0.05		4/17/98 23:45	21.984	0.065
4/18/98 1:49	22.021	-0.08		4/17/98 23:49	22.017	-0.14
4/18/98 1:53	22.013	0		4/17/98 23:53	22.009	-0.035
4/18/98 1:57	22.014	-0.025		4/17/98 23:57	21.997	0.09
4/18/98 2:01	22.005	-0.15		4/18/98 0:01	21.989	-0.01
4/18/98 2:05	22.013	-0.075		4/18/98 0:05	22.002	-0.01
4/18/98 2:09	22.009	-0.07		4/18/98 0:09	22.015	-0.115
4/18/98 2:13	21.975	0.05		4/18/98 0:13	21.987	-0.015
4/18/98 2:17	21.998	-0.11		4/18/98 0:17	22	0.005
4/18/98 2:21	21.995	-0.015		4/18/98 0:21	21.992	-0.015
4/18/98 2:25	21.985	-0.11		4/18/98 0:25	21.984	-0.01
4/18/98 2:29	21.976	0.04		4/18/98 0:29	22.001	-0.135
4/18/98 2:33	21.992	-0.19	•	4/18/98 0:33	21.989	-0.115
4/18/98 2:37	21.963	0.015	• • •	4/18/98 0:37	21.982	-0.015
4/18/98 2:41	21.984	-0.03		4/18/98 0:41	21.974	-0.01
4/18/98 2:45	21.954	-0.025		4/18/98 0:45	21.966	-0.01
4/18/98 2:49	21.966	-0.13		4/18/98 0:49	21.979	-0.01
4/18/98 2:53	21.978	-0.21		4/18/98 0:53	21.972	-0.12
4/18/98 2:57	21.949	0		4/18/98 0:57	21.964	-0.015
4/18/98 3:01	21.94	-0.1		4/18/98 1:01	21.977	-0.135
4/18/98 3:05	21.936	-0.015	•	4/18/98 1:05	21.948	0.075
4/18/98 3:09	21.949	-0.12		4/18/98 1:09	21.961	-0.03
4/18/98 3:13	21.92	0.005		4/18/98 1:13	21.95	0.005
4/18/98 3:17	21.933	-0.125		4/18/98 1:17	21.963	-0.095
				•		

4/18/98 3:21	21.925	-0.095		4/18/98 1:21	21.955	-0.095
4/18/98 3:25	21.921	-0.11	•	4/18/98 1:25	21.951	-0.095
4/18/98 3:29	21.908	-0.08		4/18/98 1:29	21.944	-0.1
4/18/98 3:33	21.906	-0.19		4/18/98 1:33	21.936	-0.08
4/18/98 3:37	21.899	0.015		4/18/98 1:37	21.932	-0.075
4/18/98 3:41	21.892	-0.055		4/18/98 1:41	21.924	-0.075
4/18/98 3:45	21.868	0.18	• •	4/18/98 1:45	21.92	0.055
4/18/98 3:49	21.902	-0.12		4/18/98 1:49	21.917	-0.08
4/18/98 3:53	21.881	-0.06		4/18/98 1:53	21.909	0
4/18/98 3:57	21.904	-0.215		4/18/98 1:57	21.931	-0.13
4/18/98 4:01	21.878	-0.04	•	4/18/98 2:01	21.901	0.055
4/18/98 4:05	21.869	-0.015		4/18/98 2:05	21.909	-0.075
4/18/98 4:09	21.861	-0.015		4/18/98 2:09	21.905	-0.075
4/18/98 4:13	21.87	-0.08		4/18/98 2:13	21.912	-0.05
4/18/98 4:17	21.866	-0.1		4/18/98 2:17	21.894	-0.005
4/18/98 4:21	21.858	-0.185		4/18/98 2:21	21.89	-0.01
4/18/98 4:25	21.854	-0.08		4/18/98 2:25	21.902	-0.215
4/18/98 4:29	21.846	-0.08		4/18/98 2:29	21.893	-0.17
4/18/98 4:33	21.821	0.025		4/18/98 2:33	21.888	-0.085
4/18/98 4:37	21.838	0.005		4/18/98 2:37	21.859	0.015
4/18/98 4:41	21.83	-0.095		4/18/98 2:41	21.859	-0.03
4/18/98 4:45	21.826	-0.095		4/18/98 2:45	21.871	-0.03
4/18/98 4:49	21.839	-0.095		4/18/98 2:49	21.862	-0.025
4/18/98 4:53	21.811	-0.08	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	4/18/98 2:53	21.853	0
4/18/98 4:57	21.807	-0.08		4/18/98 2:57	21.865	-0.1
4/18/98 5:01	21.82	-0.165		4/18/98 3:01	21.857	-0.1
4/18/98 5:05	21.795	-0.055		4/18/98 3:05	21.853	-0.12
4/18/98 5:09	21.791	-0.035		4/18/98 3:09	21.845	-0.225
4/18/98 5:13	21.787	-0.035		4/18/98 3:13	21.837	-0.1
4/18/98 5:17	21.784	-0.04		4/18/98 3:17	21.829	-0.125
4/18/98 5:21	21.784	-0.125		4/18/98 3:21	21.8	0.01
4/18/98 5:25	21.78	-0.105		4/18/98 3:25	21.817	-0.005
4/18/98 5:29	21.776	-0.085		4/18/98 3:29	21.804	-0.08
4/18/98 5:33	21.759	0		4/18/98 3:33	21.802	0.015
4/18/98 5:37	21.759	Ō		4/18/98 3:37	21.816	-0.09
4/18/98 5:41	21.759	0		4/18/98 3:41	21.788	0.05
4/18/98 5:45	21.759	Ö.	:	4/18/98 3:45	21.805	-0.13
4/18/98 5:49	21.759	-0.005	•	4/18/98 3:49	21.798	-0.015
4/18/98 5:53	21.759	0.025	•	4/18/98 3:53	21.798	-0.165
4/18/98 5:57	21.759	-0.06		4/18/98 3:57	21.779	-0.11
4/18/98 6:01	21.758	-0.02		4/18/98 4:01	21.795	-0.25
4/18/98 6:05	21.764	-0.03		4/18/98 4:05	21.765	-0.015
4/18/98 6:09	21.747	-0.025		4/18/98 4:09	21.757	0.085
4/18/98 6:13	21.754	0.04		4/18/98 4:13	21.745	-0.08
4/18/98 6:17	21.758	0.03		4/18/98 4:17	21.762	0.005
4/18/98 6:21	21.742	0.175		4/18/98 4:21	21.774	-0.18
4/18/98 6:25	21.762	-0.02		4/18/98 4:25	21.729	0.025
4/18/98 6:29	21.764	-0.125		4/18/98 4:29	21.763	-0.08
4/18/98 6:33	21.777	-0.123		4/18/98 4:33	21.738	-0.08
		0.0.			· · · · ·	

4/18/98 6:37	21.758	0.02		4/18/98 4:37	21.734	-0.1 ⁻
4/18/98 6:41	21.739	0.115	:	4/18/98 4:41	21.747	-0.1
4/18/98 6:45	21.763	0.01		4/18/98 4:45	21.722	0.005
4/18/98 6:49	21.762	0.145		4/18/98 4:49	21.714	-0.095
4/18/98 6:53	21.762	-0.035	• • • • • • • • • • • • • • • • • • • •	4/18/98 4:53	21.727	-0.075
4/18/98 6:57	21.765	0.07		4/18/98 4:57	21.723	-0.075
4/18/98 7:01	21.791	-0.15	e de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya del companya de la companya del companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la companya de la co	4/18/98 5:01	21.695	-0.06
4/18/98 7:05	21.755	0.045		4/18/98 5:05	21.712	-0.165
4/18/98 7:09	21.779	0.045		4/18/98 5:09	21.708	-0.04
4/18/98 7:13	21.761	0.155		4/18/98 5:13	21.683	-0.035
4/18/98 7:17	21.764	0.07	• .	4/18/98 5:17	21.679	-0.035
4/18/98 7:21	21.788	-0.01		4/18/98 5:21	21.7	-0.12
4/18/98 7:25	21.792	-0.015	•	4/18/98 5:25	21.676	0
4/18/98 7:29	21.778	0.225		4/18/98 5:29	21.672	0.02
4/18/98 7:33	21.786	6.125		4/18/98 5:33	21.676	0
4/18/98 7:37	21.789	13.48	•	4/18/98 5:37	21.676	0
4/18/98 7:41	21.823	12.67		4/18/98 5:41	21.676	0
4/18/98 7:45	23.011	-4.5		4/18/98 5:45	21.676	0
4/18/98 7:49	24.485	-14.35		4/18/98 5:49	21.676	-0.01
4/18/98 7:53	24.357	-14.51		4/18/98 5:53	21.676	0.13
4/18/98 7:57	22.111	-4.18		4/18/98 5:57	21.676	0.04
4/18/98 8:01	21.615	-2.18		4/18/98 6:01	21.674	-0.015
4/18/98 8:05	21.455	-1.6		4/18/98 6:05	21.702	-0.035
4/18/98 8:09	21.275	-0.785	The second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second second secon	4/18/98 6:09	21.684	0.085
4/18/98 8:13	21.179	-0.215		4/18/98 6:13	21.671	0.035
4/18/98 8:17	21.135	0.11		4/18/98 6:17	21.695	-0.07
4/18/98 8:21	21.118	0.155	•	4/18/98 6:21	21.701	-0.04
4/18/98 8:25	21.136	0.045		4/18/98 6:25	21.678	0.085
4/18/98 8:29	21.157	-0.085		4/18/98 6:29	21.681	0.185
4/18/98 8:33	21.149	-0.09		4/18/98 6:33	21.693	0.035
4/18/98 8:37	21.145	0.01		4/18/98 6:37	21.695	0.125
4/18/98 8:41	21.14	-0.07		4/18/98 6:41	21.718	-0.095
4/18/98 8:45	21.131	-0.02		4/18/98 6:45	21.7	0.01
4/18/98 8:49	21.147	0.205		4/18/98 6:49	21.72	-0.065
4/18/98 8:53	21.126	0.525		4/18/98 6:53	21.699	0.07
4/18/98 8:57	21.127	0.49		4/18/98 6:57	21.702	0.07
4/18/98 9:01	21.188	0.245		4/18/98 7:01	21.707	0.165
4/18/98 9:05	21.231	0.085	•	4/18/98 7:05	21.713	0.15
4/18/98 9:09	21.225	0.18		4/18/98 7:09	21.716	-0.055
4/18/98 9:13	21.237	0.045		4/18/98 7:13	21.74	0.05
4/18/98 9:17	21.248	0.005		4/18/98 7:17	21.743	-0.03
4/18/98 9:21	21.261	0.105		4/18/98 7:21	21.705	0.195
4/18/98 9:25	21.246	0.21		4/18/98 7:25	21.75	-0.01
4/18/98 9:29	21.249			4/18/98 7:29	21.737	0.225
4/18/98 9:33	21.282	0.14		4/18/98 7:33	21.744	6.85
4/18/98 9:37	21.288	-0.15		4/18/98 7:37	21.748	9.75
4/18/98 9:41	21.272	-0.02		4/18/98 7:41	21.782	-1.875
4/18/98 9:45	21.31	-8.15		4/18/98 7:45	23.114	-11.89
4/18/98 9:49	21.258	-15.735		4/18/98 7:49	23.698	-14.795
				•		

4/18/98 9:53	21.268	-24.64		4/18/98 7:53	21.407	<del>-4</del> .135
4/18/98 9:57	19.68	-25.91		4/18/98 7:57	20.736	-0.955
4/18/98 10:01	18.111	-27.515	•	4/18/98 8:01	20.739	-1.14
4/18/98 10:05	16.34	-28.18		4/18/98 8:05	20.58	-0.455
4/18/98 10:09	14.498	-28.4215		4/18/98 8:09	20.545	-0.26
4/18/98 10:13	12.608	-28.6775		4/18/98 8:13	20.511	0.1
4/18/98 10:17	10.704	-24.0505		4/18/98 8:17	20.489	0.105
4/18/98 10:21	8.8137	-22.3315	•••	4/18/98 8:21	20.493	0.15
4/18/98 10:25	6.8725	-19.4895		4/18/98 8:25	20.531	-0.06
4/18/98 10:29	5.8939	-17.7315		4/18/98 8:29	20.51	0.125
4/18/98 10:33	4.3474	-11.1795	•	4/18/98 8:33	20.523	0.015
4/18/98 10:37	2.9746	-4.823		4/18/98 8:37	20.519	0.115
4/18/98 10:41	2.3476	-1.8685		4/18/98 8:41	20.535	0.035
4/18/98 10:45	2.1115	-1.955		4/18/98 8:45	20.526	0.085
4/18/98 10:49	2.01	-2.327		4/18/98 8:49	20.542	-0.005
4/18/98 10:53	1.9739	-2.427		4/18/98 8:53	20.542	0.005
4/18/98 10:57	1.7205	-1.462		4/18/98 8:57	20.543	-0.03
4/18/98 11:01	1.5446	-0.539		4/18/98 9:01	20.541	-0.07
4/18/98 11:05	1.4885	-0.2565		4/18/98 9:05	20.543	0.815
4/18/98 11:09	1.4281	-0.0815		4/18/98 9:09	20.537	2.16
4/18/98 11:13	1.4368	-0.124		4/18/98 9:13	20.527	2.345
4/18/98 11:17	1.4372	-0.2135		4/18/98 9:17	20.706	1.57
4/18/98 11:21	1.4118	-0.1345		4/18/98 9:21	20.969	0.42
4/18/98 11:25	1.412	-0.094	Market Control (1975)	4/18/98 9:25	20.996	0.21
4/18/98 11:29	1.3945	-0.1635	•	4/18/98 9:29	21.02	0.01
4/18/98 11:33	1.3849	0.014		4/18/98 9:33	21.053	0.035
4/18/98 11:37	1.3932	-0.2045		4/18/98 9:37	21.038	0.055
4/18/98 11:41	1.3618	0.3265		4/18/98 9:41	21.022	0.085
4/18/98 11:45	1.3877	5.3395		4/18/98 9:45	21.06	-1.995
4/18/98 11:49	1.3523	13.03		4/18/98 9:49	21.049	-9.24
4/18/98 11:53	1.4271	21.136		4/18/98 9:53	21.039	-17.61
4/18/98 11:57	2.4556	24.959		4/18/98 9:57	20.661	<i>-</i> 24.795
4/18/98 12:01	3.9583	26.697		4/18/98 10:01	19.201	-26.92
4/18/98 12:05	5.6543	27.5585	•	4/18/98 10:05	17.517	-28.21
4/18/98 12:09	7.4474	23.138		4/18/98 10:09	15.702	-28.883
4/18/98 12:13	9.2977	14.5815		4/18/98 10:13	13.817	-29.1395
4/18/98 12:17	11.166	6.04		4/18/98 10:17	11.875	-28.9365
4/18/98 12:21	12.075	2.155		4/18/98 10:21	9.9254	-25.837
4/18/98 12:25	12.214	2.32		4/18/98 10:25	7.9891	-21.93
4/18/98 12:29	12.374	2.355		4/18/98 10:29	6.0877	-21.091
4/18/98 12:33	12.506	2.815		4/18/98 10:33	4.758	-16.386
4/18/98 12:37	12.678	2.965		4/18/98 10:37	3.6031	-11.446
4/18/98 12:41	12.845	3.44		4/18/98 10:41	1.8695	-3.1765
4/18/98 12:45	13.069	3.205		4/18/98 10:45	1.4808	-1.522
4/18/98 12:49	13.271	3.485		4/18/98 10:49	1.3139	-1.0235
4/18/98 12:53	13.533	3.27		4/18/98 10:53	1.2342	-0.6875
4/18/98 12:57	13.71	3.59	·	4/18/98 10:57	1.1764	-0.483
4/18/98 13:01	13.968	3.375		4/18/98 11:01	1.1092	-0.213
4/18/98 13:05	14.187	3.695	•	4/18/98 11:05	1.0967	0.0695
				•		

*						
4/18/98 13:09	14.428	3.37		4/18/98 11:09	1.0798	0.3535
4/18/98 13:13	14.643	3.495		4/18/98 11:13	1.0666	0.6385
4/18/98 13:17	14.926	3.28		4/18/98 11:17	1.1106	0.222
4/18/98 13:21	15.102	3.705		4/18/98 11:21	1.1505	0.0835
4/18/98 13:25	15.342	3.6		4/18/98 11:25	1.1943	-0.094
4/18/98 13:29	15.582	3.595		4/18/98 11:29	1.155	0.163
4/18/98 13:33	15.843	3.28		4/18/98 11:33	1.1672	0.2315
4/18/98 13:37	16.062	3.295		4/18/98 11:37	1.1755	0.122
4/18/98 13:41	16.301	8.565		4/18/98 11:41	1.1876	1.0885
4/18/98 13:45	16.499	19.545		4/18/98 11:45	1.2135	7.8385
4/18/98 13:49	16.721	28.39	•	4/18/98 11:49	1.1999	16.063
4/18/98 13:53	18.014	33.475		4/18/98 11:53	1.4053	23.938
4/18/98 13:57	20.408	32.715	•	4/18/98 11:57	2.7812	26.1205
4/18/98 14:01	22.399	33.065		4/18/98 12:01	4.4125	27.5245
4/18/98 14:05	24.709	31.375		4/18/98 12:05	6.1929	28.0555
4/18/98 14:09	26.951	29.7		4/18/98 12:09	8.0053	23.4285
4/18/98 14:13	29.012	28.87		4/18/98 12:13	9.9174	14.988
4/18/98 14:17	30.984	28.555		4/18/98 12:17	11.804	6.78
4/18/98 14:21	32.891	28.45		4/18/98 12:21	12.691	3.53
4/18/98 14:25	34.786	28.45		4/18/98 12:25	12.915	3.8
4/18/98 14:29	36.695	27.625		4/18/98 12:29	13.16	3.935
4/18/98 14:33	38.581	26.515		4/18/98 12:33	13.397	4.075
4/18/98 14:37	40.476	21.755		4/18/98 12:37	13.675	4.225
4/18/98 14:41	42.22	15.64	and the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second of the second o	4/18/98 12:41	13.947	4.17
4/18/98 14:45	43.884	8.595		4/18/98 12:45	14.212	4.365
4/18/98 14:49	44.827	4.625		4/18/98 12:49	14.52	4.005
4/18/98 14:53	45.348	2.47		4/18/98 12:53	14.781	4.11
4/18/98 14:57	45.603	1.47		4/18/98 12:57	15.085	3.89
4/18/98 15:01	45.752	0.775		4/18/98 13:01	15.321	3.995
4/18/98 15:05	45.842	-2.39		4/18/98 13:05	15.603	3.785
4/18/98 15:09	45.897	-11.865		4/18/98 13:09	15.863	3.68
4/18/98 15:13	45.907	-23.345		4/18/98 13:13	16.12	3.695
4/18/98 15:17	45.364	-29.8		4/18/98 13:17	16.36	3.585
4/18/98 15:21	43.524	-29.905		4/18/98 13:21	16.599	3.585
4/18/98 15:25	41.238	-28.015		4/18/98 13:25	16.859	3.27
4/18/98 15:29	39.404	-28.43		4/18/98 13:29	17.077	3.27
4/18/98 15:33	37.543	-28.63	• .	4/18/98 13:33	17.316	3.06
4/18/98 15:37	35.635	-28.65		4/18/98 13:37	17.513	3.075
4/18/98 15:41	33.718	-23		4/18/98 13:41	17.731	6.55
4/18/98 15:45	31.817	<i>-</i> 21.67		4/18/98 13:45	17.928	17.09
4/18/98 15:49	29.905	-16.085		4/18/98 13:49	18.128	24.68
4/18/98 15:53	29.118	-17.52		4/18/98 13:53	19.041	29.99
4/18/98 15:57	27.483	-9.745		4/18/98 13:57	21.346	28.95
4/18/98 16:01	26.688	-6.02		4/18/98 14:01	23.064	30.15
4/18/98 16:05	25.614	-0.915		4/18/98 14:05	25.039	29.825
4/18/98 16:09	25.534	-0.905		4/18/98 14:09	27.136	28.875
4/18/98 16:13	25.484	-0.83		4/18/98 14:13	29.094	28.565
4/18/98 16:17	25.431	-0.865	•	4/18/98 14:17	31.004	28.355
4/18/98 16:21	25.353	-0.59		4/18/98 14:21	32.911	28.35
				·		

						•
4/18/98 16:25	25.318	-0.605		4/18/98 14:25	34.807	28.345
4/18/98 16:29	25.258	-0.44		4/18/98 14:29	36.675	27.425
4/18/98 16:33	25.235	-0.325		4/18/98 14:33	38.581	25.52
4/18/98 16:37	25.197	-0.2		4/18/98 14:37	40.476	19.47
4/18/98 16:38	25.17	-0.1		4/18/98 14:41	42.16	12.86
17 10,00	20.11			4/18/98 14:45	43.685	5.915
				4/18/98 14:49	44.37	2.74
•	•			4/18/98 14:53	44.732	1.08
				4/18/98 14:57	44.868	0.58
				4/18/98 15:01	44.918	0.175
			•	4/18/98 15:05	44.948	-0.005
•				4/18/98 15:09	44.984	0.065
				4/18/98 15:13	44.953	0.075
			•	4/18/98 15:17	44.947	0.255
				4/18/98 15:21	44.997	0.06
				4/18/98 15:25	44.968	0.16
•				4/18/98 15:29	44.998	-0.045
				4/18/98 15:33	45.009	0.065
				4/18/98 15:37	45	0.05
				4/18/98 15:41	44.989	-1.13
				4/18/98 15:45	45.022	-10.815
				4/18/98 15:49	45.01	-20.515
				4/18/98 15:53	44.763	-28.715
				4/18/98 15:57	42.859	-28.65
	·			4/18/98 16:01	40.907	-28.54
				4/18/98 16:05	39.02	-28.6
				4/18/98 16:09	37.129	-26.04
				4/18/98 16:13	35.199	-19.42
				4/18/98 16:17	33.3	-14.615
				4/18/98 16:21	31.921	-19.315
				4/18/98 16:25	31.315	-28.935
				4/18/98 16:29	30.377	-25.205
				4/18/98 16:33	28.058	-13.61
				4/18/98 16:37	25.528	<b>-</b> 6
				4/18/98 16:38	25.336	1

### Section 4A EMI/RE02 Testing

"NOT REQUIRED"

This test was not performed for PLO F03. Qualification set by F01 testing.

#### Section 4B EMI/RE02 Testing

"NOT REQUIRED"

This test was not performed for PLO F04. Qualification set by F01 testing.

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## Section 5A; Frequency and Power Hystersis - F03

This section contains the results of a full functional test over temperature taken after the PLO (F03) was subjected to thermal cycling under vacuum and vibration.

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#### 6BC

TEST DATA SHEET & (Sheet 1 of 4)

Functional Testing (Paragraph 4.2.1) Asst-Thermal Cycling CPT Test Setup Verified

Signature

Paragraph 4.2.1.3, Functional	Testing:
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	aph 4.2.1.3, Functional Testing							
Step	Test	Expected	Measured	Pass/Fai				
1	Potential Difference from ± 15 V RTN to:							
	PLO Base Plate	< 1.0 Vac	120.	PASS				
	Spectrum Analyzer	< 1.0 Vac	050	PASS				
	Frequency Counter Chassis	< 1.0 Vac	.040	PA-65				
	Power Meter Chassis	< 1.0 Vac	.05V	PAGS				
4	Evacuate vacuum chamber	<10 ⁻² torr	Pressure =torr	7				
5 .	and record pressure			Ambient				
.3	Thermal couple readings	TC1 = 22 ± 2 °C	TC1 = 2l. q' °C	Pass				
			TC2= <u>Z/.9</u> °C	N/A				
			TC3 = <u>ZI.9</u> °C	N/A				
6	DRO L/A	4140%1V	DRO L/A = <u>\$7</u> ~V	Pass				
	PLO L/A	44061V	PLO L/A = 57W	Pass				
	Is PLO locked?	Yes	YesX	. 0				
		0002 64	2No	Pass				
7	PLO Frequency	57.290344 GHz ± 200 kHz	Freq. = 57. 290 33447 GHz	Press				
,	PLO Power	17 to 20 dBm	P = <u>/9.96</u> dBm	Pass				
8	Input Voltage and Current							
	VM1 Voltage	+15 ± 0.1 V	VM1 = 15.03 V	Pass				
	VM2 Voltage	-15 ± 0.1 V	VM2 = -15.09 V	Pass				
	IM1 Current	600 mA max.	IM1 = _ 52\ mA	Priss				
	IM2 Current	100 mA max.	IM2 = 66.6 mA	Pass				
	DRO L/A Voltage	«IV 0 1 / V	DRO L/A = 56 mV	Pass				
	PLO L/A Voltage	440 61 V		Pass				
12	RF Output Power and	17 to 20 dBm. 000 2 64		Pass				
	Frequency	57.290344 GHZ ± 200 kHz	Freq. = 57 240 385 021 GHz	Pass				
Ī	Baseplate Temp. (TC1)	TC1 = 22 ±2°C	TC1=_2~(*) °C	Pass				
13	Frequency vs. Voltage							
Γ	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = +15,23 V	٥.,				
		-15.2 ± 0.05 V	-Voltage = : -15.20 V	Pacs				
		57.290344 GHz ± 200 kHz	Freq. = 57. 29633625 GHz	lass Pass				
				Perc				

# Record data only if performing test under vacuum

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# TEST DATA SHEET (Sheet 2 of 4) Functional Testing (Paragraph 4.2.1)

Step	aph 4.2.1.3 (Cont):  Test	Expected	Measured	Pass/Fa				
14	Frequency vs. Voltage	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1						
	± 15 V Supplies	$+14.8 \pm 0.05 \text{ V}$ $+\text{Voltage} = \frac{i4.82 \text{ V}}{}$						
	* 1	-14.8 ± 0.05 V	Voltage =14.91 V	Pass Pass				
	·	57.290344 GHz ± 200 kHz		Pacs				
		17 to 20 dBm	P = 14.44 dBm	Peres				
15	Spurious and Sub	-200 4 -90 dBc	See Plots	Buss				
16	Power level of 114.58 GHz signal	<-10 dBm	Power of 114 58 GHz - dBm	Pass				
17	Load VSWR and Frequency I	Pulling						
	2:1 mismatch over 1λ	N/A	Worst Case Freq =	N/A				
	2:1 mismatch over 1λ	N/A	Worst Case Power = dB Peak	N/A				
18	Operating Temperature	TC1 = 1 ±2°C	TC1 = /,/02	Pars				
	@ 1°C baseplate		TC2= 1.6°C	N/A				
			TC3= 0.40C	N/A				
		0 - 1V	DRO L/A = <u>u«</u> "V	Rus				
		0 - 1V	PLO L/A = <u>\(\alpha\)\ m\</u> V	Pass				
19	Input Voltage and Current							
	VM1 Voltage	+15 ± 0.1 V	VM1 = <u>+/5,0</u> V	Press				
	VM2 Voltage	-15 ± 0.1 V	VM2 =V	Pass				
	IM1 Current	600 mA max.	IM1 = <u>507</u> mA	Pass				
	IM2 Current	100 mA max.	$IM2 = \underline{\qquad ? \  \  } mA$	Pass				
	DRO L/A Voltage	<del>414</del> 061	DRO L/A = 48 aV	Pas				
	PLO L/A Voltage	SIV-061	PLO L/A = 48 MV	Peiss				
	RF Output Power	17 to 20 dBm ,0002 64	Power = <u>14.5/</u> dBm	Press				
	Frequency	57.290344 GHź ± <del>200 kHz</del>	Freq. = 52 290 334 7 GHz	Pars				
	Frequency vs. Voltage							
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = <u>*15-2</u> V	Pres				
	,	-15.2 ± 0.05 V,0003 G+	-Voltage = <u>سرج ک</u> V	Pais				
		57.290344 GHz ± <del>200 kHz</del>	Freq. = 57.296 334 6 GHz	Pas				
		17 to 20 dBm	$Power = \underline{/9.57} dBm$	Pass				
l	Frequency vs. Voltage							
	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage =V	Pass				
		-14.8 ± 0.05 V _{0002 64}	-Voltage = <u>''4.8</u> V	Pars				
		57.290344 GHZ ± <del>200 kHz</del>	Freq. = <u>5&gt; 290347</u> GHz	Pass				
1		17 to 20 dBm	$Power = \underline{79.57} dBm$					

## 68 C TEST DATA SHEET ∲(Sheet 3 of 4) Functional Testing (Paragraph 4.2.1)

Step	ph 4.2.1.3 (Cont): Test	Expected	Measured	D (F
19	Spurious and Sub	-200 % -90 dBc		Pass/Fai
(Cont)	Power level of 114.58 GHz	<-10 dBm	See Plots  Power of 114.58 GHz = C	<u> </u>
	signal	<-10 dBm	dBm	Pris
	Load VSWR and Frequency	Pulling		
	2:1 mismatch over 1λ	N/A	Worst Case Freq =	N/A
•	2:1 mismatch over 1λ	N/A	Worst Case Power =dB Rake	N/A
21	Operating Temperature	TC1 = 44 ±2°C	TC1 = 43.9°C	Pass
•	@ +44°C Baseplate		TC2 = 44.5° L	N/A
	,		TC3 = 44,(1)	N/A
		0 - 1V	$DRO L/A = \frac{2iO}{V}$	Pass
		0 - 1V	PLO L/A = <u>.013</u> V	Pacs
22	Input Voltage and Current			I
	VM1 Voltage	+15 ± 0.1 V	VM1 = <u>/5.0</u> V	Pass
	VM2 Voltage	-15 ± 0.1 V	VM2 = V	Aiss
	IM1 Current	600 mA max.	IM1 = s32 mA	Pass
	IM2 Current	100 mA max.	IM2 = 68 mA	Pass
	DRO L/A Voltage	<1¥ 0 % 1 V	DRO L/A = V	Auss
	PLO L/A Voltage	C14061V	PLO L/A = V	Pass
	RF Output Power and	17 to 20 dBm, 0∞2 64	$Power = \frac{18.15}{\text{dBm}}$	<del></del>
	Frequency	57.290344 GHz ± <del>200 kHz</del>	Freq. = 57. 21032660 GHz	Pres
	Frequency vs. Voltage			
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = 15.2 V	Pass
		-15.2 ± 0.05 V, 0002 G	$-Voltage = \underline{-5.2V}$	Pass
		57.290344 GH2 ± 200 kHz	Freq. = 57. 290 326 60 GHz	
		17 to 20 dBm	$Power = \frac{15'.13}{\text{dBm}}$	
	Frequency vs. Voltage			· · · · · · · · · · · · · · · · · · ·
	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage = <u>/4, 4</u> V	Auss
		-14.8 ± 0.05 V	-Voltage =	Pas
1		57.290344 GHz ± 200 kHz	Freq. = 57. 27032660GHz	PASS
	•	17 to 20 dBm	Power = <u>/8.14</u> dBm	PASS

AE-26758A 21 Jan 98

# TEST DATA SHEET ((Sheet 4 of 4)) Functional Testing (Paragraph 4.2.1)

Рагадта	ph 4.2.1.3 (Cont):	Post Thermal Cycling	CAT	
Step	Test	Expected	Measured	Pass/Fail
22	Spurious and Sub	-200 % -90 dBc	See dota	Pass
(Cont)	Power level of 114.58 GHz signal	<-10 dBm	Power of 114.58 GHz = -	Pass
· • •	Load VSWR and Frequency	Pulling		
	2:1 mismatch over 1λ	N/A	Worst Case Freq = 5 H ₂	N/A
•	2:1 mismatch over 1λ	N/A	Worst Case Power = dB Penk	N/A

Shop Order No.: 431 615	Test Engineer: M. Belil
Unit Serial No.: E93	Quality Assurance.
Date:	Boxt, Pep. (2) 4/20/98

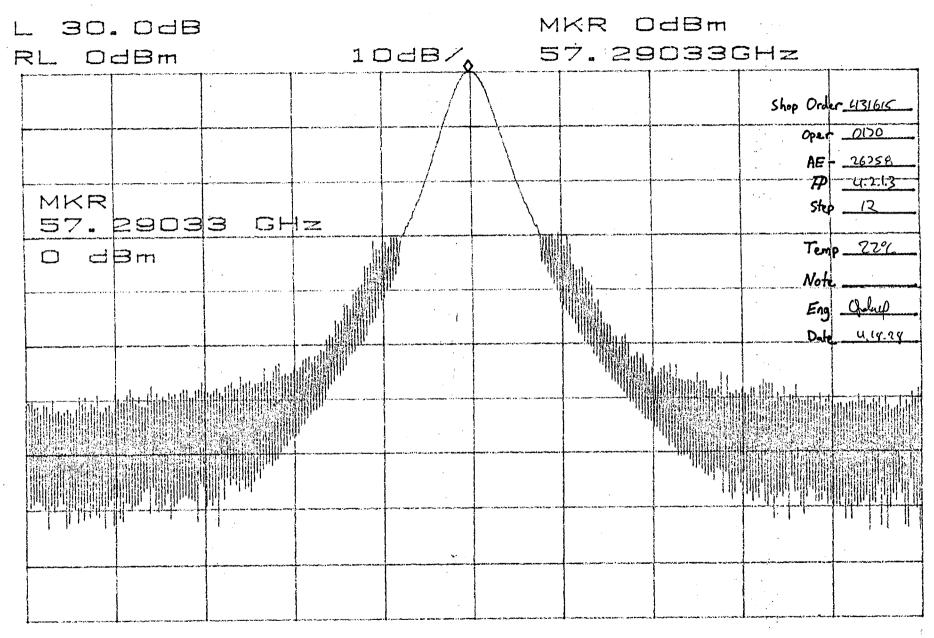
ATTEN 30dB MKR 11.60dBm RL 17.1dBm 10dB/ 6.87488GHz Shop Order 431615 AE - 26758 P 4.2.13 MKR Step 12 6.87488 GHZ 11.60 dBm Temp 22 Note Eng Lawbertlondo 4.18.99

CENTER 6.87485GHz

*RBW 300kHz *VBW 300kHz SWP 50.0ms

SPAN 20. DOMHZ





CENTER 57. 29034GHz

*RBW 300kHz *VBW 300kHz SWP 50.0me

SPAN 10.00MHz

Hz SWP 50.0ms



*RBW 3. OKHZ *VBW 3. OKHZ SWP 67. Oms CENTER 57, 8632395826Hz SPAN 1, DOOKHz

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SWP 67. Dms

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CENTER 57. 433562061GHz SPAN 1. 000kHz 3. OKHZ *RBW 3. OKHZ *VBW

SWP 67. Dms

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CENTER 57. DD38845GHz SPAN 500. DKHz *RBW 3. OKHZ *VBW 3. OKHZ

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SPAN 500. OKHZ SWP 140ms

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CENTER 56.8606587GHz

SPAN 500. OKHZ

*RBW 3. OKHZ *VBW 3. OKHZ

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CENTER 114.58067242GHz *RBW 1.0kHz *VBW 1.0kH:

SPAN 50. DOKHZ Z(%) SWP 200ms

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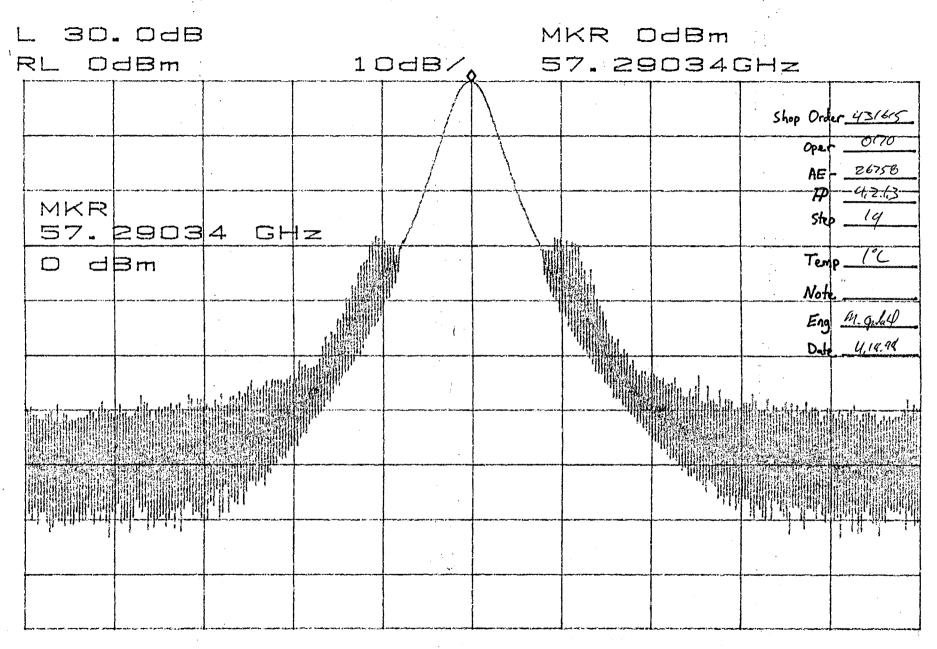
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CENTER 6.87485GHz

SPAN 20. DOMHZ



*RBW 300KHz *VBW 300KHz (190) % SWP 50. Ome



CENTER 57. 29034GHz

SPAN 10. DOMHZ



*RBW 300kHz *VBW 300kHz ** SWP 50.0me

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CENTER 56.7143100GHz *RBW 3.0KHz *VBW 3.0KHz

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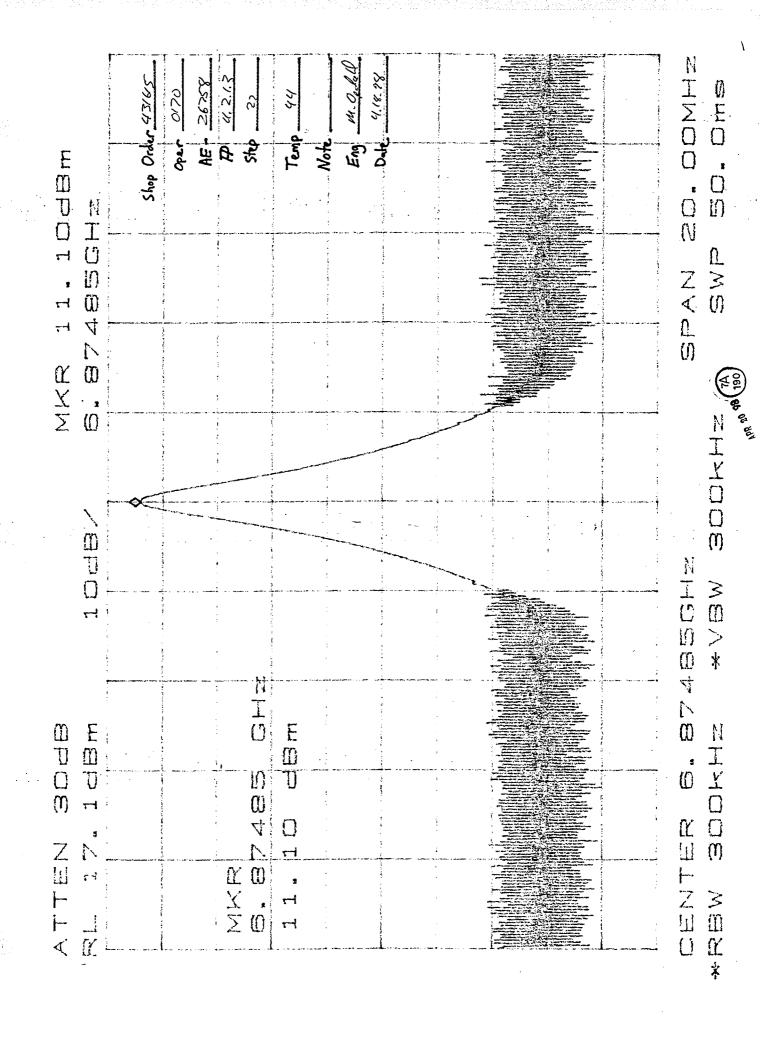
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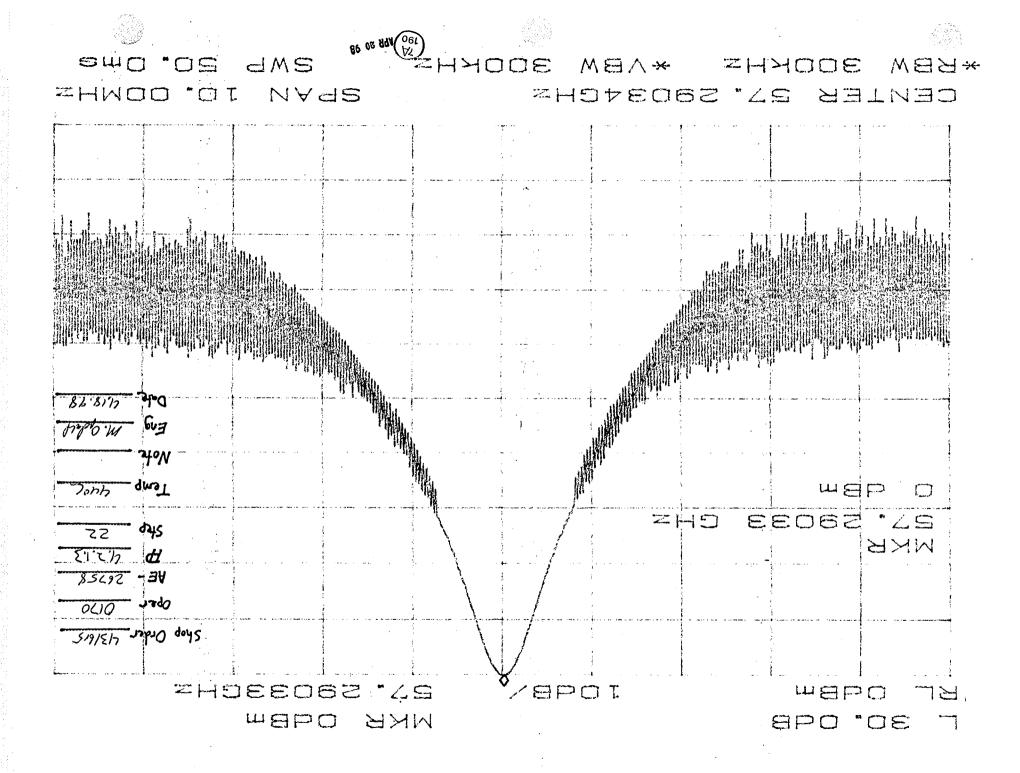
CENTER 57.8632370GHz *RBW 3.0kHz *VBW 3.0kHz

SPAN 500. DKHz SWP 140ms



30.0dB MKR -77. 17dBm RL OdBm 10dB/ 114.58067350GHz Shop Order (13/6/5) AE - 26758 P 4.2.1.3 Step 19 Temp 100 Note Eng Malay 4.19.98 how when we have the way the way





RL OdBm 10dB/ 56.7174206GHz  Shop Order 4366 Open 0776 AE - 2675 P 4376 Sho 23  Temp 442 Note. Eng	CL 3	0.00	В	VAVC	3 88	М	KR -	-93.	17dB	m
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CENTER 56.7174281GHz SPAN 500.0kHz

*RBW 3. OKHZ *VBW

3. OKHz

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CENTER 57. 0038797GHz

SPAN 500. OKHZ

*RBW 3. OKHz *VBW 3. OKHz

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CENTER 57. 1471050GHz SPAN 500. OKHZ 3. OKHZ

*RBW 3.OKHZ *VBW

MAD SWP

140ms

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CENTER 57. 4335572GHz

SPAN 500. OKHZ

*RBW 3.OKHZ *VBW

*VBW 3. OKHZ

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MKR 57.	·	647	GHz	.*				· ·	<u>4.21.3</u> 22
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CENTER 57.5767830GHz SPAN 500.0KHz *RBW 3.0KHz *VBW 3.0KHz

CL 30.0dB VAVG 45 MKR -92.83dBm 'RL OdBm 57.7199905GHz 10dB/ Shop Order 431615 Oper 000 AE - 26758 42.13 MKR Stro 22 57.7199905 GHZ -92.83 dBm Temp_ Note Eng M. adul Date 4.14.98

CENTER 57. 7200089GHz

SPAN 500. OKHZ

*RBW 3. OKHZ *VBW 3. OKHZ



CL 30.0dB VAVG 20 MKR -93.17dBm 'RL OdBm 10dB/ 57.8632823GHz Shop Order 43165 Open 0070 AE - 26758 4.2.13 MKR 25 57.8632823 GHz -93.17 dBm Temp 44 Note Eng mahil Det 4.18.99 farment when make the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the companies of the c

CENTER 57.8632340GHz

SPAN 500. OKHZ

*RBW 3. OKHz *VBW

* VBW 3. DKH APR 20 98

30.0dB MKR -77. 17dBm 'RL OdBm 10dB/ 114.58066967GHz Shop Order 431615 000 Oper AE - 26758 4.2.1.3 MKR Steo 22 114 58066967 GHz -7717 dBm Temp <u>uu</u> Note Eng un aby 

CENTER 114.58067242GHz *RBW 1.0kHz *VBW 1.0kHz

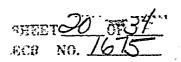
SPAN 50. OOKHZ SWP 200ms



## Section 5B; Frequency and Power Hystersis - F04

This section contains the results of a full functional test over temperature taken after the PLO (F04) was subjected to thermal cycling under vacuum and vibration.

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## 6BC

TEST DATA SHEET & (Sheet 1 of 4) Functional Testing (Paragraph 4.2.1)

			(I diagraph 4.2.1)
Test Setup Verified.	189	Post-Thermal	Cycling CPT
Test Setup Verined.			
	_Signature_		

Paragraph 4		

Step	ph 4.2.1.3, Functional Testing:		T	1: <u>-</u>
1	Potential Difference from ± 1	Expected	Measured	Pass/Fail
1	PLO Base Plate	<del></del>	·	·
		< 1.0 Vac	.050	Pass
	Spectrum Analyzer	< 1.0 Vac	.050	Pass
	Frequency Counter Chassis	< 1.0 Vac	.ouv	Pass
	Power Meter Chassis	< 1.0 Vac	.05V	Pass
4	Evacuate vacuum chamber and record pressure	<10 ⁻² torr	Pressure = torr	Ausiert
5	Thermal couple readings	TC1 = 22 ± 2 °C	TC1 = <u>₹/. ਉ</u> °C	P 765
			TC2=21.9°C	N/A
			TC3 = 62 9 °C	N/A
6	DRO L/A	414041V	DROL/A = 67 MV	Pass
	PLO L/A	44061V	PLOL/A = 7/ aN	Pros
	Is PLO locked?	Yes	YesX	
		11002 64	2No	Pacs
7	PLO Frequency	57.290344 GHz ± 200 kHz	Freq. = 57, 290 340 400 GHz	Pass
	PLO Power	17 to 20 dBm	P= 19.92 dBm	Rass
8	Input Voltage and Current			1
	VM1 Voltage	+15 ± 0.1 V	$VM1 = \underbrace{+15.01}_{}V$	Pass
	VM2 Voltage	-15 ± 0.1 V	VM2 = -15. 05 V	A _K
	IM1 Current	600 mA max.	IM1 = 527 mA	Priss
	IM2 Current	100 mA max.	IM2 = 57.8 mA	Pass
	DRO L/A Voltage	«IV-011V	DRO L/A = 69 mV	Pass
	PLO L/A Voltage		PLO L/A = 73 ~V	Page
12	RF Output Power and	17 to 20 dBm .000 2 64	P= 19.91 dBm	Pass
	Frequency	57.290344 GHz ± 200 kHz	12 Freq. = <u>57. 290 אַט בּס</u> ד GHz	Pass
	Baseplate Temp. (TC1)	TC1 = 22 ±2°C	TC1=_ 72.2°C	Pass
13	Frequency vs. Voltage			1 11 1 1 1 1 1
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = $15.21$ V	Pass
		-15.2 ± 0.05 V	$\sqrt{2} \text{Voltage} = \frac{1}{12} \sqrt{2} \text{V}$	Pass
		57.290344 GHz ± 200 kHz	Freq. = 57. 290 340 562 GHz	Pass
		17 to 20 dBm	P= /9.9/ dBm	Pass

* Record data only if performing test under vacuum

AE-26758A 21 Jan 98

## TEST DATA SHEET & (Sheet 2 of 4) Functional Testing (Paragraph 4.2.1)

Step	ph 4.2.1.3 (Cont): Test	Expected	Measured	Pass/Fai					
14	Frequency vs. Voltage								
	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage = $14,80$ V:	Pass					
		-14.8 ± 0.05 V 0002 G	$\int_{2} Voltage = \frac{-i\mathcal{A}_{1}}{V}$	Pass					
		57.290344 GHz ± 200 kHz	Freq. = 57. 290 340 557 GHz.	Pass					
		17 to 20 dBm	P= 19.12 dBm	Pass					
15	Spurious and Sub	-200 to -90 dBc	See Plots	Pres					
16	Power level of 114.58 GHz	<-10 dBm	Power of 114 58 GHz-	Pag					
	signal		dBm	Pay					
17	Load VSWR and Frequency I	·,······							
	2:1 mismatch over 1\(\lambda\)	N/A	Worst Case Freq =	N/A					
	2:1 mismatch over 1λ	N/A	Worst Case Power =dB Peak	N/A					
18	Operating Temperature	TC1 = 1 ±2°C	TC1= 1.5%	Paces					
	@ 1°C baseplate		TC2= 1,9°C	N/A					
			TC3= 1.0°L	N/A					
	<b>.</b>	0 - 1V -	DRO L/A = 60 mV	Ass					
		0 - 1V	PLO L/A = 65 mV	Pass					
19	Input Voltage and Current								
	VM1 Voltage	+15 ± 0.1 V	VM1 = <u>+15.0</u> V	Pass					
	VM2 Voltage	-15 ± 0.1 V	VM2 = _~\( \sigma_O \) V	Pacs					
	IM1 Current	600 mA max.	IM1 =mA	Pagg					
	IM2 Current	100 mA max.	IM2 = mA	Pass.					
	DRO L/A Voltage	<1¥ 0 % 1	DRO L/A = 60 mV	Pass					
	PLO L/A Voltage	SIV 0 601	PLO L/A = 66 m V	Pass					
•	RF Output Power		Power = 2007 dBm 20 Mg/4	Pors					
	Frequency	57.290344 GHz ± <del>200 kHz</del>	Freq. = 57. 210 326 915 GHz	Pass					
	Frequency vs. Voltage		-Valence - 4/02 V	<u> </u>					
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage =V	Pass					
		-15.2 ± 0.05 V _{.0002} G+	-Voltage =	Pass					
		57.290344 GHz ± 200 kHz	Freq. = \$\frac{5}{2403269} GHz	Pass					
·	Frequency vs. Voltage	17 to 20 dBm	Power = Zo. 38 dBm ZO Magday	Pass					
	± 15 V Supplies	.140.100537	+Voltage = <u>rug</u> V						
	E 13 A Subbiles	+14.8 ± 0.05 V	$+ Voltage = \underbrace{V \cup V}_{2} V$ $- Voltage = \underbrace{V \cup V}_{2} V$	Pacs					
1		14 X + (1 ()5 V	V- A Oliga =A	Pass					
		57.290344 GHZ ± 200 kHz	Freq. = 57 210 326 9 GHz	Rass					

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SHEET 02 OF 34 ECB NO. 76 75

## 63 C TEST DATA SHEET 6 (Sheet 3 of 4) Functional Testing (Paragraph 4.2.1)

Step	Test	Expected	Measured	Pass/Fai				
19	Spurious and Sub	-200 4 -90 dBc	Su Plots .	Pass				
(Cont)	Power level of 114.58 GHz	<-10 dBm	Power of 114.58 GHz = C	1.				
	signal		66 dBm	P255				
	Load VSWR and Frequency I	Pulling		<u> </u>				
	2:1 mismatch over 1λ	N/A	Worst Case Freq = 3 Hz	N/A				
	2:1 mismatch over 1λ	N/A	Worst Case Power =  -36 dB lack	N/A				
21	Operating Temperature	TC1 = 44 ±2°C	TC1= 45.0	Auss				
	@ +44°C Baseplate		TC2= us.6	N/A				
	r		TC3 = 44,7	N/A				
	İ	0 - 1V	DRO L/A =120V	Pass				
	<u>i</u>	0 - 1V	PLO L/A = .wa V	Pass				
22	Input Voltage and Current							
	VM1 Voltage	+15 ± 0.1 V	$VM1 = \underbrace{+iS.o}_{V} V$	Pass				
	VM2 Voltage	-15 ± 0.1 V	$VM2 = \underline{-15.0} V$	Pass				
	IM1 Current	600 mA max.	IM1 = <u>541</u> mA	Pass				
	IM2 Current	¹ 100 mA max.	IM2 = <u>59.4</u> mA	Perso				
	DRO L/A Voltage	414061V	DRO L/A =120 V	Pass				
	PLO L/A Voltage	C14061V	PLO L/A = _ cion_ V	Pass				
	RF Output Power and		Power = 20 dBm	Pass				
	Frequency	57.290344 GHz ± <del>200 kHz</del>	Freq. = 57. 200 3>7 GHz	Pass				
	Frequency vs. Voltage		<u></u>					
	± 15 V Supplies	+15.2 ± 0.05 V	+Voltage = 15.2_V	Pass				
		-15.2 ± 0.05 V, 0002 G	-Voltage = -15.2 V	Pass				
ł		57.290344 GH2 ± 200 kHz	Freq. = 57.2-90 337 GHz	Auss				
[		17 to 20 dBm	Power = <u>?0</u> dBm	Pass				
	Frequency vs. Voltage							
	± 15 V Supplies	+14.8 ± 0.05 V	+Voltage = 14 4 V	Pers				
	. !	-14.8 ± 0.05 V	,-Voltage = <u>~।५.५</u> V	Pass				
1		57.290344 GHZ ± 200 kHz	Freq. = 57.290 337 GHz	fass				
1	ļ	17 to 20 dBm	Power = 20 dBm	Pres				

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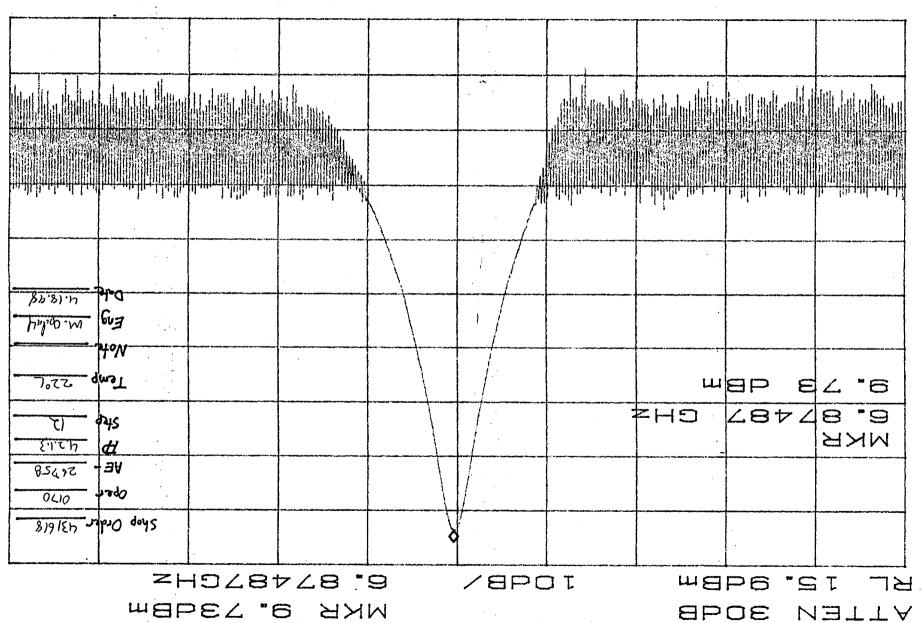
## TEST DATA SHEET # (Sheet 4 of 4) Functional Testing (Paragraph 4.2.1)

Paragra	ph 4.2.1.3 (Cont):	Post Thermal Cycling	<u> </u>	
Step	Test	Expected	Measured	Pass/Fail
22	Spurious and Sub	-200 % -90 dBc	See Plots	Pass
(Cont)	Power level of 114.58 GHz signal	<-10 dBm	Power of 114.58 GHz = : 0 dBm	Pass
	Load VSWR and Frequency	Pulling		
	2:1 mismatch over 1λ	N/A	Worst Case Freq =	N/A
	2:1 mismatch over 1λ	N/A	Worst Case Power =	N/A

Shop Order No.: U31618	Test Engineer: Mark Olah
operation: 5170	Quality-Assurance: 4/2/98 (190)
Unit Serial No.: FOU	Quality-Assurance: 17,000 Blood
Date: 4,18,94	Boxt, Pep. 7-30-98 (3)
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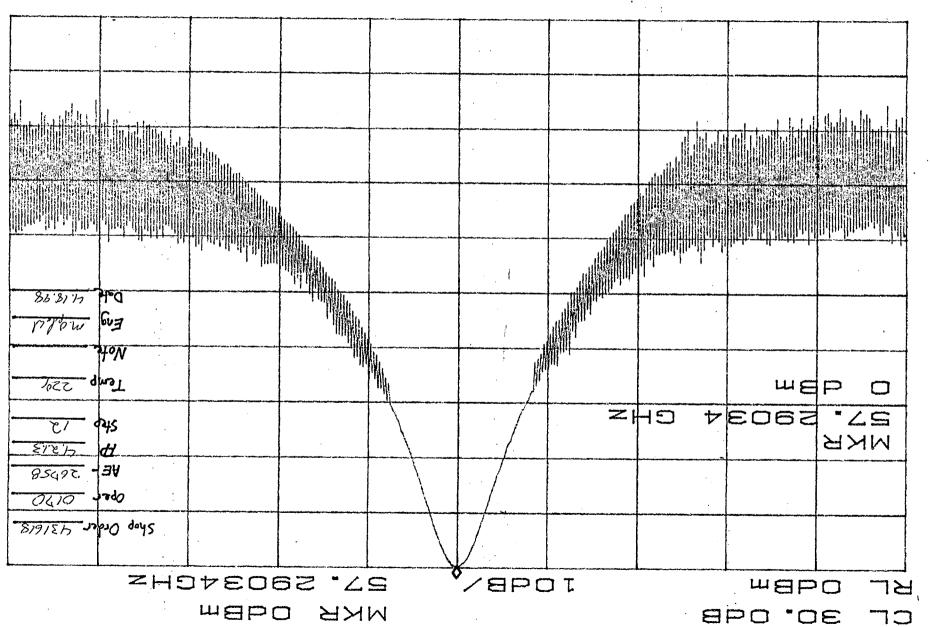


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CENTER 57.5767940GHz

*RBW 3. OKHz *VBW 3. OKHz

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CENTER 57.8632460GHz

*RBW 3. OKHZ *VBW 3. OKHZ

CL 30.0dB	VAVG	1,00	MKR	-96.	17dB	m
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CENTER 57. 7200202GHz SPAN 500. OKHZ

*RBW 3. OKHZ

*VBW 3. DKHZ

SWP 140ms

CL 30. DdB MKR -68. DOGBm RL OdBm 10dB/ 114.58068458GHz Shop Order 43/6/4 0170 Oper 26758 4-2-1-3 MKR 16 Stro 114,58068458 GHz -681 Temp_ 22 dBm Note Eng Oplan / Campt 4.14,78 March March Sherriballand Sommer Brand Market who who when bold was bealthand

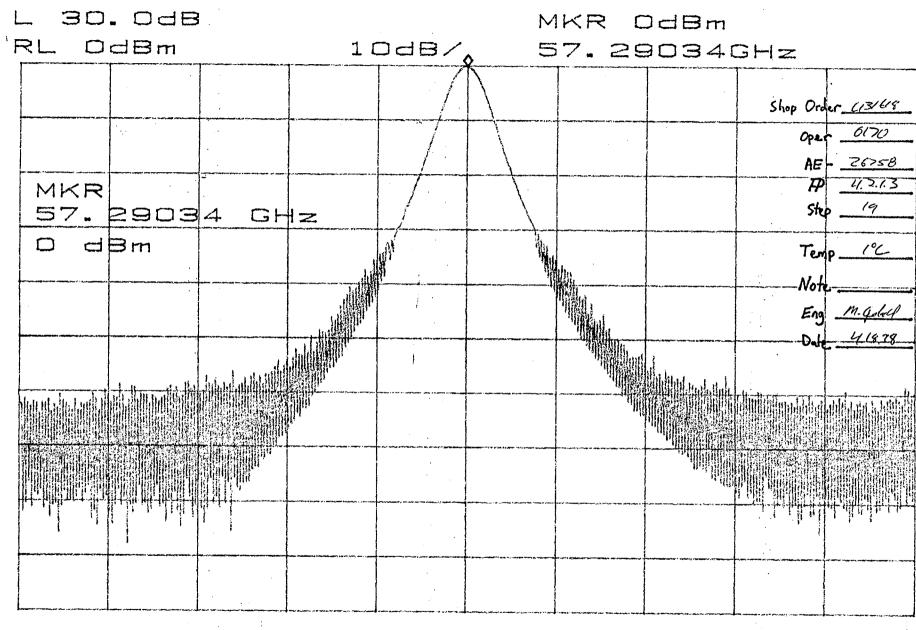
CENTER 114.58068450GHz SPAN 50.00KHz *RBW 1. OKHz *VBW 1. OKHz SWP 200ms

ATTEN 30dB MKR 9.57dBm RL 15.9dBm 10dB/ 6.87483GHz Shop Order 431618 26758 -4213 MKR Step 19 6.87483 GHZ 9.57 dBm Temp_10 Note M. goland Eng 4.18.98

CENTER 6.87480GHz

RBW 300kHz VBW 300kHz

SPAN 20. DOMHZ SWP 50. Dms



CENTER 57. 29034GHz

SPAN 10. DOMHZ *RBW 300kHz VBW 300kHz SWP 50.0ms

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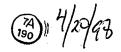
CENTER 56. 7174320GHz SPAN 500. OKHZ

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CENTER 56. 8606587GHz *RBW 3. OKHZ *VBW 3. OKHZ SWP 140ms

SPAN 500. OKHZ



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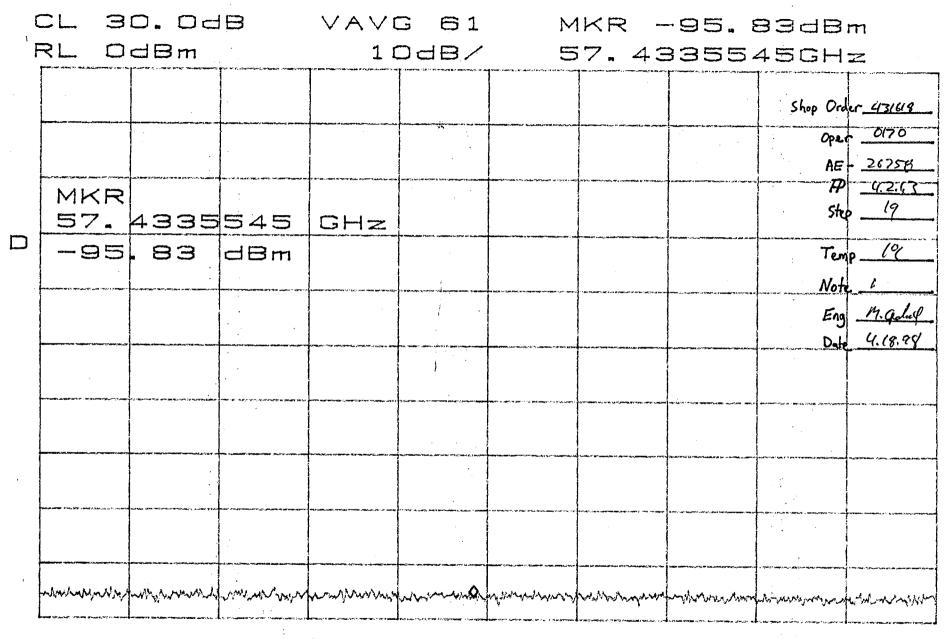
CENTER 57. DD38845GHZ SPAN 500. DKHZ *RBW 3. OKHz *VBW 3, OKHz

SWP 140ms

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CENTER 57. 1471100GHz SPAN 500. OKHZ *RBW 3. OKHZ

*VBW, 3. OKHZ SWP 140ms



CENTER 57. 4335620GHz $4/20/93^{(1)}$

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CENTER 57.5767870GHz

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CENTER 57.8632390GHz

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SHOTI AMS

CL 30.0dB MKR -66.33dBm RL OdBm 10dB/ 114.5806614GHz Shop Order 43/6/4 oper 0170 AE - 26758 4.2.1.3 MKR 5806614 GHZ 114. -661 33 dBm M. Opolas

CENTER 114.5806624GHz

*RBW 3. OKHz *VBW

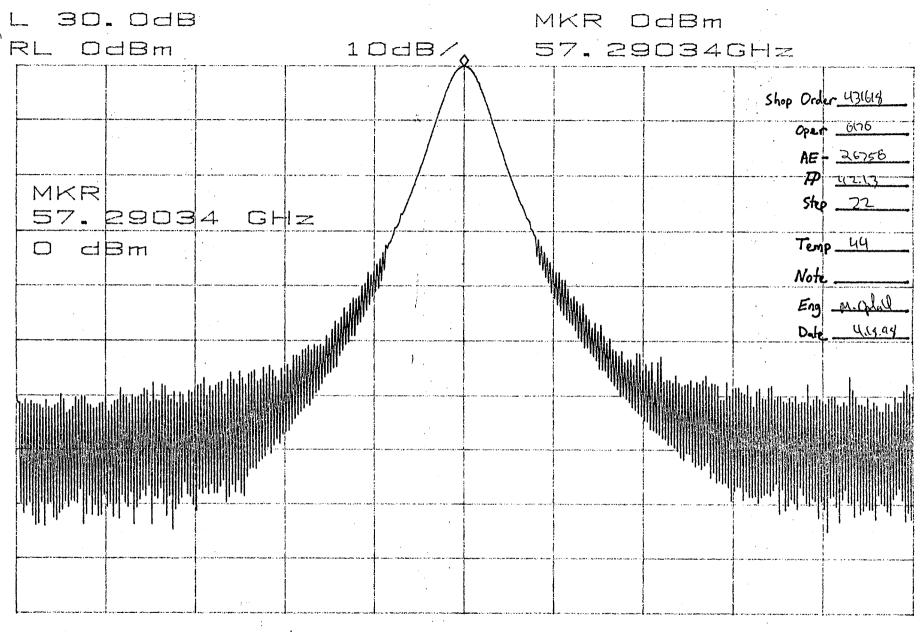
*VBW 3. OKHZ

SPAN 200. OKHZ SWP 67. Oms

ATTEN 300B MKR 9.23dBm 'RL 15.9dBm 1048/ 6.87487GHz Shop Order 431618 Oper BITO AE - 26758 P 42.13 MKR Step _ 22 6.87487 GHZ 9.28 dBm Temp 44 Note_ Eng W.Oslay Date unagag

CENTER 6.87480GHz

SPAN 20. DOMHZ RBW 300kHz VBW 300kHz SWP 50.0me



CENTER 57. 29034GHz

*RBW 300kHz VBW 300kHz SWP 50.0ms

SPAN 10. DOMHZ

CL 30.0dB VAVG 100 MKR -91.17dBm 'RL OdBm 10dB/ 56.7174354GHz Shop Order 431618 Oper 0070 AE - 26758 P (2.1.) MKR Step 22 56.7174354 GHZ -91dBm Temp 44 Note Ena M. Ostall Date U.19.98 francismosphanity was a first francismosphanismo

CENTER 56.7174337GHz

SPAN 500. OKHZ *RBW 3. OKHz *VBW ,3. OKHz SWP 140ms

*RBW 3. OKHZ *VBW 3. OKHZ

CENTER 56, 8606595CHZ

30°09

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MKR -96, 6748m

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VAVG 100

CL 30.0dB VAVG MKR -94.67dBm 'RL OdBm 10dB/ 57.0038870GHz Shop Order 43164 Open 0170 AE - 26754 P 421.5 MKR Step _ 22 57.0038870 GHZ -94.67 dBm Temp 44 Note Eng Malal Date 4.19.99 formation with the company of the co

CENTER 57. 0038854GHz

*RBW 3. OKHZ *VBW 3. OKHZ

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CENTER 57. 1471112GHz SPAN 500. OKHZ

*RBW 3. OKHz *VBW 3. OKHz

SWP 140ms

*KRW 3. OKHZ *VBW 3. OKHZ SWP 1.40m6 CENTER 57, 43356296Hz

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30,0dB VAVG 41 MKR -95,50dBm

30.0dB VAVG 15 MKR -96.00dBm 'RL OdBm 10dB/ 57.5767904GHz Shop Order 431614 Open 0170 AE - 26758 P 4,2,13 MKR 5/20 _ 22 57. 5767904 GHZ -961 00 dBm Temp 44 Note Eng Mighel Date 4.18.94 possession of the property of

57.5767887GHz *RBW 3. OKHZ

*VBW 3. OKHZ



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*FBW 3. OKHZ *VBW 3. OKHZ SWP 140me

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CL 30, 0dB VAVG 38 NKR -96, 00dBm

CL 30.0dB VAVG 63 MKR -94.33dBm RL OdBm 1048/ 57.8632421GHz Shop Order 431618 Open 0176 AE - 26758 P 4.2.1.3 MKR Step _ 72 57.8632421 GHZ -94.33 dBm Temp 44 Note Eng M. Oslay Date 4.18.98 mannymathan

CENTER 57.8632404GHz *RBW 3.0KHz *VBW 3.0KHz



CL 30.0dB MKR -67.50dBm 'RL OdBm 10dB/ 114.5806760GHz Shop Order 431616 Oper 0170 AE - 26758 **P** _4.2.1.3 MKR 5tep 72 114. 5806760 GHZ -67 50 dBm Temp 44 Note Eng Mighel Date 4.18.99

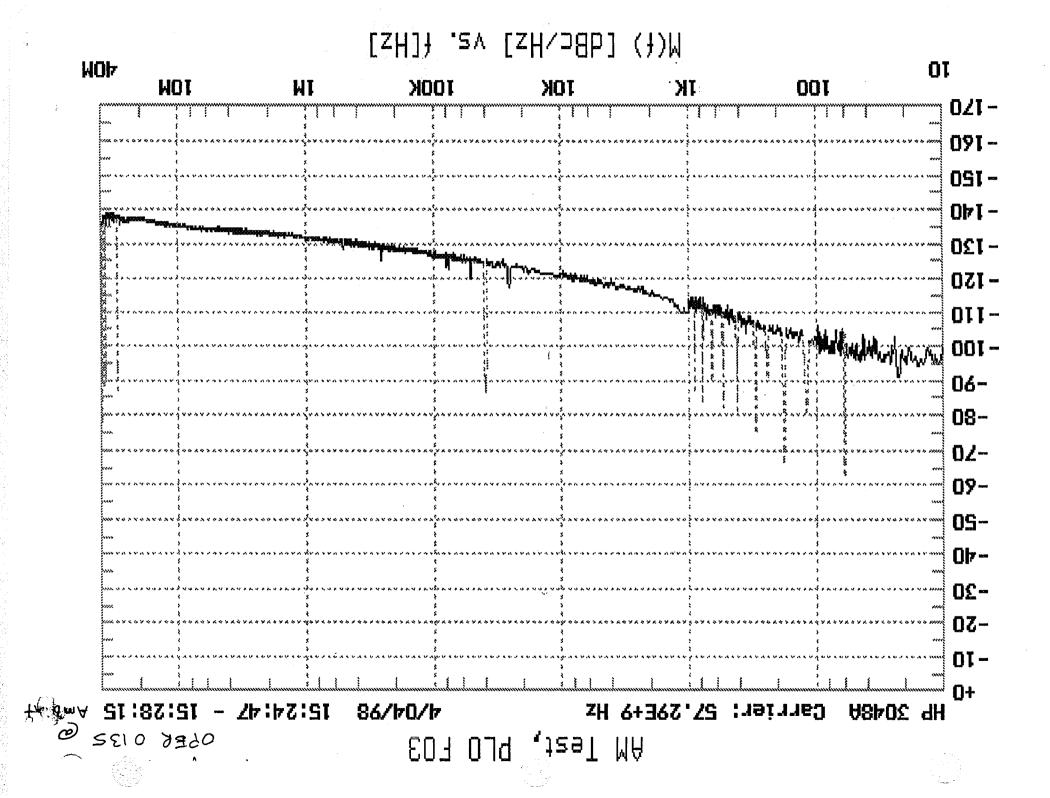
114.5806760GHz SPAN 200.0KHz CENTER *RBW 3. OKHz *VBW 3. OKHz SWP 67. Oms

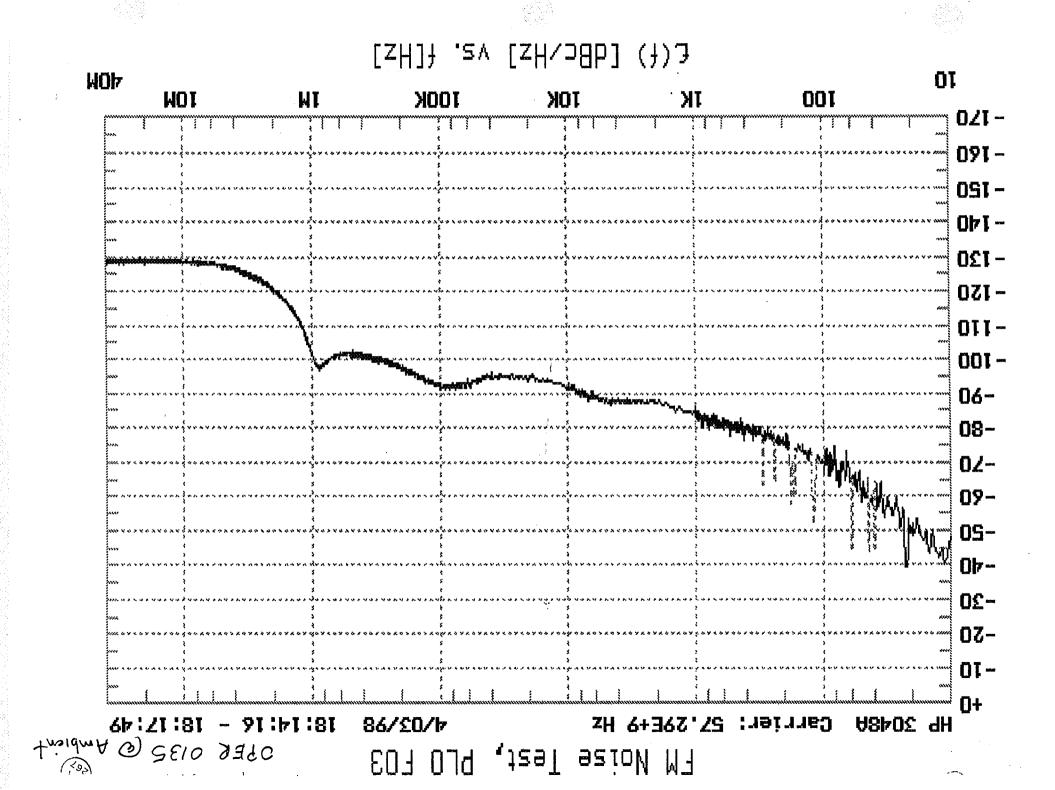


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Section 6A: AM/FM Noise Levels - F03

The following pages contain the results of the AM and FM Noise tests for PLO F03. The plot of the FM Noise Test shows that (f) [dBc/Hz] falls under -100 dBc/Hz at all frequencies more than 1 MHz from the carrier. The plot of the AM noise test shows that outside of 1 MHz, AM noise is less than -132.





Section 6B: AM/FM Noise Levels - F04

The following pages contain the results of the AM and FM Noise tests for PLO F04. The plot of the FM Noise Test shows that (f) [dBc/Hz] falls under -100 dBc/Hz at all frequencies more than 1 MHz from the carrier. The plot of the AM noise test shows that outside of 1 MHz, AM noise is less than -135.

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- 3.2.1.5.6 Frequency drift caused by aging. The frequency drift caused by aging shall be as estimated over the instrument life specified in 3.2.3.2.
- 3.2.1.6 RF output power. The radio frequency (RF) output power shall be between 11 dBm and 20 dBm.
- 3.2.1.7 Output power stability. The output power stability is the sum of power variations with temperature, bias voltage. hysteresis, and load, and power drift caused by aging over the specified ranges and duration in 3.2.1.5.2 through 3.2.1.5.6 The overall output power variation shall be no greater than ±1.5 decibels (dB).
- 3.2.1.8 Load VSWR. With a load VSWR of 2.0:1 or less applied to the output the unit shall meet all specified requirements. No damage or performance degradation shall occur to the unit at any VSWR, including short- and open-circuit conditions.
- 3.2.1.9 AM noise. The double sideband (DSB) amplitude modulation (AM) noise in a 1 Hz bandwidth shall be a minimum of 130 dB minimum below the carrier at all frequencies greater than 1 MHz away from the carrier frequency.
- 3.2.1.10 FM noise. The frequency modulation (FM) noise in a 1 Hz bandwidth shall be a minimum of 100 dB below the carrier at all frequencies greater than 1 MHz away from the carrier frequency.
- 3.2.1.11 Spurious and subharmonic signals. Spurious and subharmonic outputs shall be a minimum of 90 dB below the RF output power.
- 3.2.1.12 Harmonics. All harmonic signals shall be a minimum of 30 dB below the RF output power.
- 3.2.1.13 Microphonics. The unit shall meet the requirements of 2.2.1.5 when subjected to the random vibration level of 10⁻³ g²/Hz from 20 Hz to 200 Hz and the sinusoidal vibration level of 0.1 g peak-to-peak from 20 Hz to 120 Hz.
- 3.2.1.14 Warm-up time. The maximum warm-up time of the unit shall not exceed 30 minutes.
- 3.2.1.15 Grounding and shielding. The DC bias shall be returned to its power source via an electrically isolated ground terminal. Shielded conductors shall be used to prevent undesired radiation and to shield circuits from stray electric fields.
- 3.2.1.16 Input voltage protection. The unit shall be internally protected to prevent damage/performance degradation caused by an intermittent short circuit on any input voltage. The unit shall not suffer damage as a result of momentary application of two times the designated input voltage.
- 3.2.1.17 Reverse polarity protection. The unit shall be protected against the application of a reverse polarity voltage to the input terminals.
- 3.2.1.18 Electromagnetic interference (EMI) control. The unit shall be designed to ensure a minimum of 90 dB attenuation from the metallic structure enclosure, RF connectors, joints and power lines, or any other lead penetrating the case over the frequency range from DC to 8.0 GHz.
- 3.2.2 Physical characteristics
- 3.2.2.1 Configuration and envelope dimensions. The configuration, dimensions, tolerances, mounting provisions, and other physical details of the unit shall be as shown in drawings 1348360 and 1348325.
- 3.2.2.2 Weight. The weight of the unit shall not exceed 2.0 pounds. This weight is inclusive of the reference crysta oscillator defined in drawing 1348325.
- 3.2.3 Operability
- 3.2.3.1 Reliability. The unit shall be designed to have a reliability of not less than 0.979 during a three-year operational life on orbit (with a five-year goal) following up to five years in storage and two years of integration and test.

Measurement Parameter Summary

as. Type : PHASE LOCK LOOP K_VCO Method: MEASURED

Start Freq : 10 Hz

K_vco : 104.7E+3 Hz/Volt

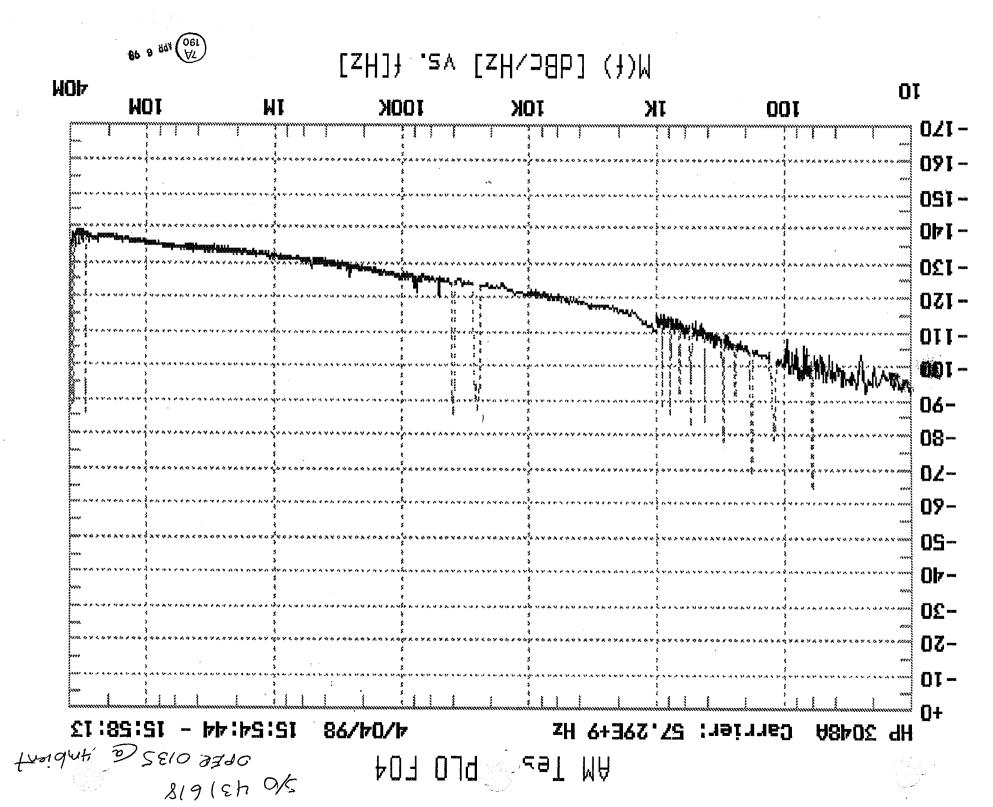
Stop Freq : 40.E+6 Hz Min. Aves : 4 Loop Suppr. : NOT VERIFIED

Carrier Freq: 57.29E+9 Hz Closd PLL BW: 5.444E+3 Hz Det. In Freq: 310.06E+6 Hz Entered Kvco: 100.E+3 Hz/Volt Pk Tune Rnge: 415.3E+3 Hz Assumed Pole: 150.E+3 Hz

Center Voltg: 0 Volts UUT : USER'S SRCE, MAN Ref. Srce : 8662A , SYS Ext. Tmbase : NOT IN USE Tune Range : 5 Volts
Ph. Detector: 5 TO 1600 MHz

K_phi Method: MEASURED Dn Converter: 70427A , SYS, VCO

K_phi : 261.E-3 V/Rad HP11848A LNA: OUT



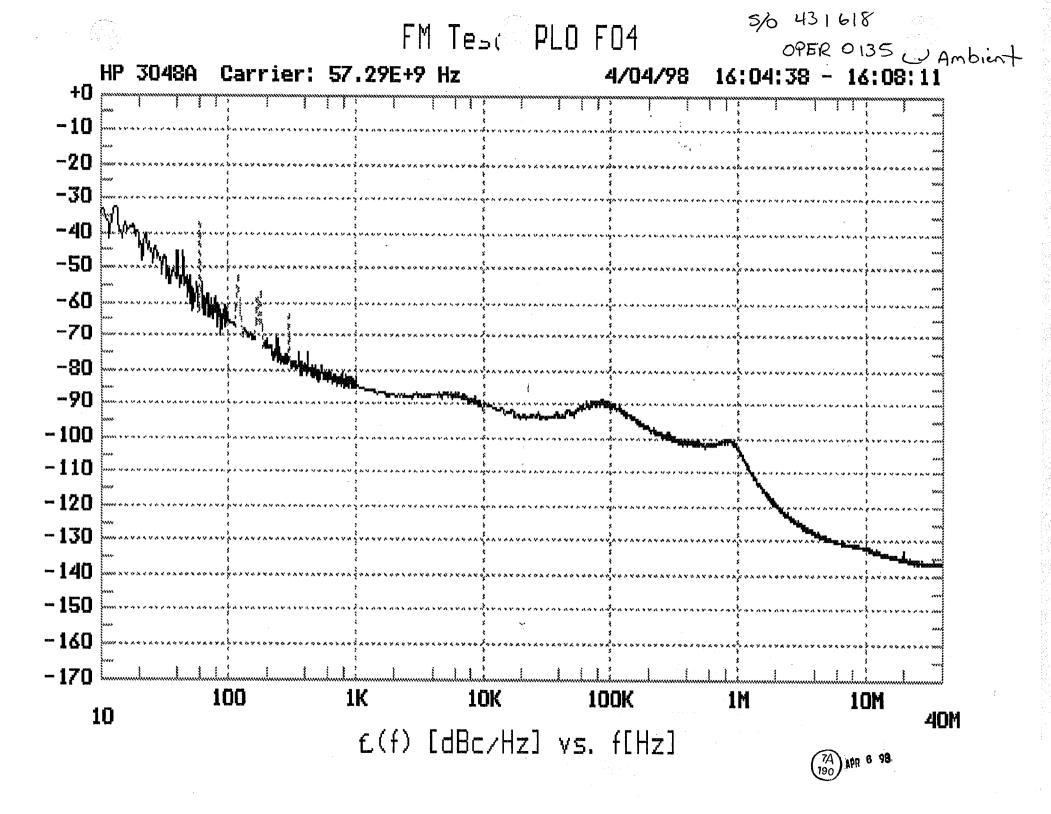
Measurement Parameter Summary

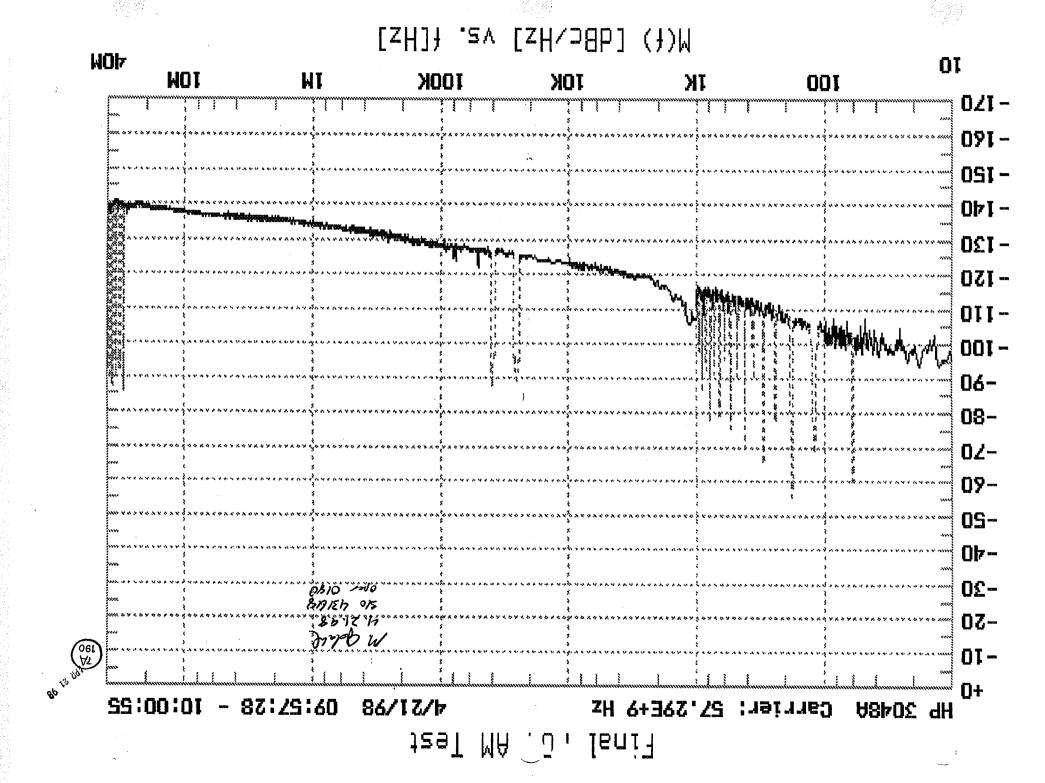
as. Type : AM NOISE K_dsc Method: DOUBLE SIDED SPUR

Spur Ampl. : -26 dBc
Spur Freq. : 1.02E+6 Hz
K_phi : 5.646E-3 V/Rad Start Freq : 10 Hz Stop Freq : 40.E+6 Hz Min. Aves : 4

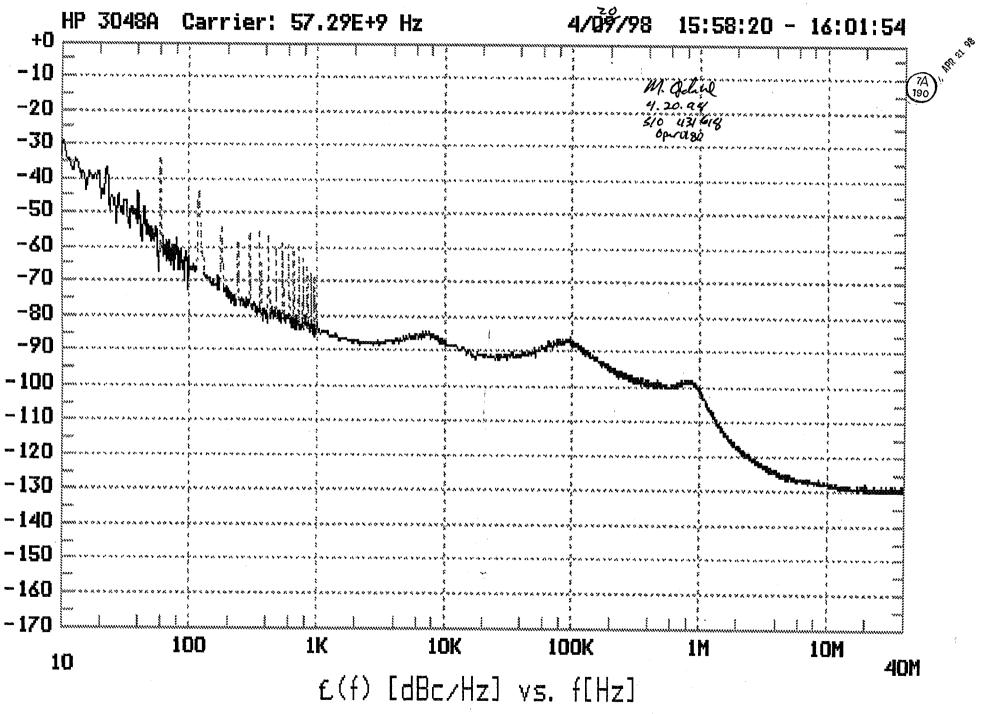
Carrier Freq: 57.29E+9 Hz UUT Source : USER'S SRCE, MAN Det. In Freq: 57.29E+9 Hz CAL Source : USER'S SRCE, MAN

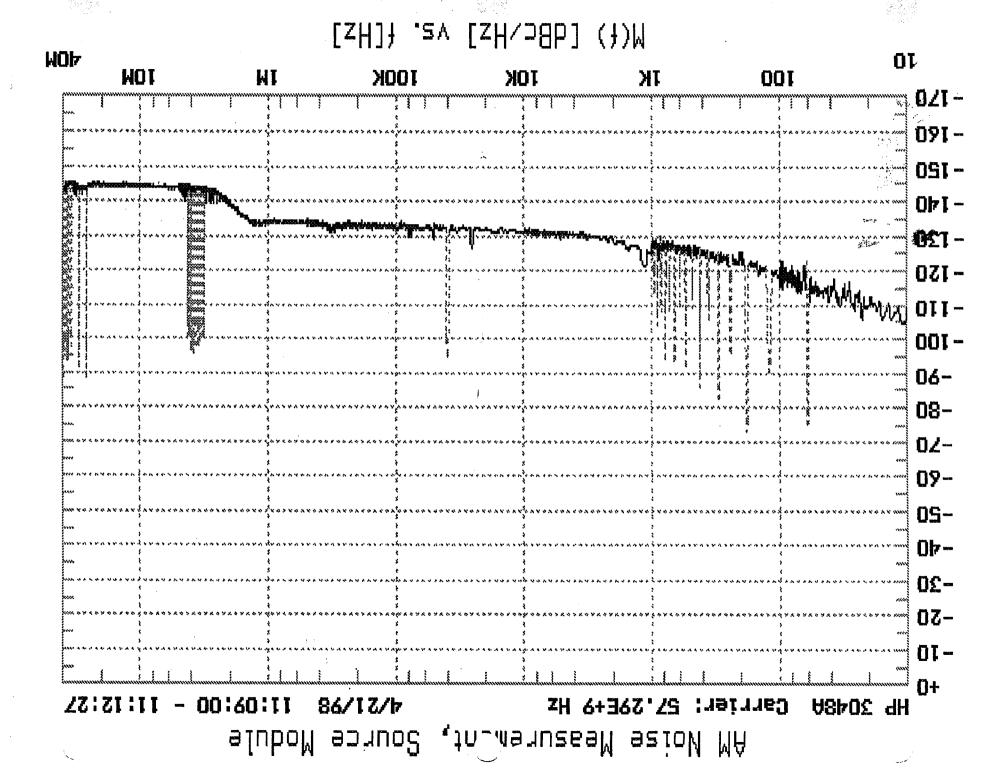
AM Detector : USER'S DEV, MAN Ph. Detector: EXTERNAL HP11848A LNA: IN





PLO FO4 Alal FM Test





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National Aeronautics and Space Administration	Report Docur		Page				
Report No.	Government Accession	lo.	3. Recipient's Catalog	No.			
Title and Subtitle			5. Report Date				
Integrated Advanced M			10 June				
(AMSU-A), Performance		Performing Organiza	tion Code				
7. Author(s)			Performing Organiza	tion Report No			
D. Pines		11172					
D. Pilles		10. Work Unit No.					
Performing Organization Name and	f Address		<u></u> -	-			
Aerojet			11. Contract or Grant N	lo.			
1100 W. H	•		NAS	5-32314			
Azusa, CA			13. Type of Report and	Period Covered			
 Sponsoring Agency Name and Ad NASA 	aress		Final				
	Space Flight Center		Sponsoring Agency	Code			
	Maryland 20771			•			
This is the Performance \ 1348360-1, S/N F03 and (AMSU-A).	Verification Report, E F04 for the Integrate	EOS Phase ed Advance	Locked Oscillato ed Microwave Sou	r Assy, P/N unding Unit-A			
17. Key Words (Suggested by Author	(s))	18. Distribution Statement					
EOS Microwave Sys	Unclassified Unlimited						
19. Security Classif. (of this report)	nis page)	21. No. of pages	22. Price				
Unclassified	Unclassified	- F-9-/	or pages				
ASA FORM 1626 OCT 86			<u> </u>				

PREPARATION OF THE REPORT DOCUMENTATION PAGE

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- Block 7. <u>Authors.</u> Provide full names exactly as they are to appear on the title page. If applicable, the word editor should follow a name.
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- Block 10. <u>Work Unit No.</u> Provide Research and Technology Objectives and Plants (RTOP) number.
- Block 11. Contract or Grant No. Provide when applicable.
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4. TITLE AND SUBTITLE Integrated Advanced Microwave Sounding Unit-A (AMSU-A), Performance Verification Report				5. F	5. FUNDING NUMBERS NAS 5-32314		
6. AUTHOR(S) D. Pines							
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Aerojet 1100 W. Hollyvale Azusa, CA 91702					8. PERFORMING ORGANIZATION REPORT NUMBER 11172 10 June 1998		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) NASA Goddard Space Flight Center Greenbelt, Maryland 20771				10.	10. SPONSORING/MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES				-		· · · · · · · · · · · · · · · · · · ·	
12a. DISTRIBUTION/AVAILABILITY STATEMENT			12b.	12b. DISTRIBUTION CODE			
							
13. ABSTRACT (Maximum 200 words) This is the Performance Verification Report, EOS Phase Locked Oscillator Assy, P/N 1348360-1, S/N F03 and F04 for the Integrated Advanced Microwave Sounding Unit-A (AMSU-A).							
14. SUBJECT TERMS						15. NUMBER OF PAGES	
EOS Microwave System						16. PRICE CODE	
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 TA
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 PE
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Performance Verification Report	Report 11172						
METSAT Phase Locked Oscillator A	10 June 1998						
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INPUT FROM: DATE		DATE					
D. Pines							
CHECKED BY:	DATE	JOB NUMBER:		DATE			
APPROVED SIGNATURES			DEPT. NO.	DATE			
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Product Team Leader (D. Pines)	tarek #	inea	8661	1/15/78			
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Systems Engineer (R. Platt) \mathscr{D}	Is Plats		8311	7/70/98			
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Configuration Management (J. Ca	avanaugh) 🔑 📞	auancing -	8361	813/98			
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